FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

All sections must be addressed, or the application will be considered invalid

I. APPLICANT INFORMATION

A. Applicant Name: Big Blackfoot Chapter of Trout Unlimited

Mailing Address: PO Box 1

City: Ovando State: MT Zip: 59854

Telephone: 406.240.4824 E-mail: ryen@montanatu.org

B. Contact Person (if different than applicant): see above

Address:

City: State: Zip:

Telephone: E-mail:

C. Landowner and/or Lessee Name (if different than applicant): United States Forest Service

Mailing Address: 3583 MT-HWY 83

City: Seeley Lake State: MT Zip: 59868

Telephone: 406-677-2233 E-mail: shendrickson@fs.fed.us

II. PROJECT INFORMATION

A. Project Name: Morrell Creek Habitat Improvement Project

River, stream, or lake: Morrell Creek

Location: Township: 18, 17 N Range: 15 W Section: 36, 1

Latitude: 47.273538 Longitude: -113.458525 *within project (decimal degrees)*

County: Powell

B. Purpose of Project:

The purpose of this project is to improve floodplain function and reduce anthropogenic sediment inputs to Morrell Creek by decommissioning approximately 1.6 miles mile of road adjacent to Morrell Creek. Morrell Creek is a high priority, critical bull trout habitat stream that supports adfluvial bull trout and genetically pure westslope cutthroat trout populations.

Morrell Creek decommisioning & revegetation

C. Brief Project Description (attach additional information to end of application):

Morrell Creek is a fourth-order tributary to the Clearwater River, the largest tributary in the Blackfoot River watershed. Morrell Creek is a high priority tributary, bull trout core area, designated critical bull trout habitat and supports pure populations of westslope cutthroat trout. The bull trout populations are adfluvial, meaning they live in the area lakes around Seeley Lake before migrating to Morrell Creek to spawn. This is a very unique life history form and one of the few remaining populations in the west. This project, which involves eliminating a chronic source of sediment to Morrell Creek has been identified as a priority under the Collaborative Forest Landscape Restoration Program—a program identified in 2009 by the Secretary of Agriculture to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes.

Bull trout are highly sensitive to water temperature and sediment loading making Morrell Creek an important tributary in their long-term persistence as it is fed in the spawning reaches by groundwater and has a roadless headwater system which helps in securing long-term water quality and quantities. An existing road system running along the stream corridor is creating sediment issues and this project seeks to correct those issues by rerouting a segment of forest road impacting Morrell Creek. Project specifics involve decommissioning 1.6 miles of road that is located within the 300 ft buffer of Morrell Creek and immediately within the floodplain. The road segment is negatively contributing to riparian and stream functions in the form of reductions in large wood, riparian cover, and increased sedimentation, and rip rap. To accommodate continued access for the public and forest management, one-mile of road will be rebuilt in the upland zone in place of the 1.6 miles.

The proposed project involves ripping the existing road system 12 inches deep and 14 to 16 feet wide, meaning an excavator or dozer will de-compact the road surface, which will enhance infiltration and reduce runoff. The loosened surface and road fill impacting the stream channel and associated riparian areas will be pulled back to eliminate the road prism encroachment and used to recontour the slopes on the edge of the valley to a natural angle of repose or hauled off-site away from the riparian and floodplain area. Abandoned road surfaces will be also be reclaimed passively and actively. The newly loosened road surface enhances natural recolonization of vegetation, which in turn results in maintained infiltration capacity, protects against erosion and ultimately stabilizes the historic road prism. Large woody debris will also be incorporated onto the associated road surfaces and floodplains to create additional microsites to increase moisture retention, shelter young plants as they become established, and provide a source of organic material. Disturbed areas will be revegetated with a certified weed-free native streambank or appropriate upland grass seed mixture and soil amendments/erosion control will be applied as appropriate. Native cuttings, shrubs and trees will also be transplanted within riparian areas to facilitate shade and recruitment of woody debris when available. A noxious weed management plan will also be developed and implemented pre-and post-construction.

Benefits of this project include: Increased, long-term habitat quality and channel stability, improved riparian cover, shade, habitat complexity, and large wood, reduced sedimentation and rip rap.

ANSWER IN LARGER TEXT AFTER SIGNATURE PAGE

D. Length of stream or size of lake that will be treated: 1.0 miles of Morrell Creek as well as a reduction in sediment downstream

E. Project Budget:

Grant Request (Dollars):	**$**	60,095
Matching Dollars:	**$**	271,999.50
Matching In-Kind Services:*	**$**	6,735

**salaries of government employees are not considered matching contributions*

Total Project Cost: **$** 338,829.50

F. **Attach** itemized (line item) budget – *see budget template*

G. **Attach** specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support and fish biologist support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete a *supplemental questionnaire*. (http://fwp.mt.gov/fwpDoc.html?id=36110)

H. **Attach** land management & maintenance plans that will ensure protection of the reclaimed area.

III. PROJECT BENEFITS (attach additional information to end of application):

A. What species of fish will benefit from this project?

Westslope cutthroat trout and bull trout.

B. How will the project protect or enhance wild fish habitat?

Sediment has been identified as a limiting factor for bull trout and we have an opportunity to improve riparian habitat at the upper end of one of the most important bull trout spawning reaches in the Clearwater/Blackfoot River drainage.

C. Will the project improve fish populations and/or fishing? To what extent?

Yes, by providing off-site recruitment to the Clearwater River, area lakes, Blackfoot River and angling opportunities on-site. Morrell Creek runs through public land with access available.

D. Will the project increase public fishing opportunity for wild fish and, if so, how?

Yes: Yes, by increasing the quality of wild trout and spawning habitat in the Blackfoot River drainage. The public also has legal streamside access via adjacent USFS lands in certain reaches.

E. The project agreement includes a 20-year maintenance commitment. Please discuss your ability to meet this commitment.

The USFS has committed to signing an appropriate version of a Landowner Agreement for a minimum of 20 years or a time period required by the Future Fisheries Program. Also, the road is being permanently decommissioned and relocated.

F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?

Already answered above. By removing a stream-side road, we will improve water quality conditions within Morrell Creek.

G. What public benefits will be realized from this project?

This project involves the continuation of the Blackfoot River Restoration program and the restoration of an important bull trout and westslope cutthroat stream. Public benefits include: 1) expanding suitable habitat conditions for pure westslope cutthroat trout and fluvial juvenile bull trout populations, 2) improved water quality on-site and downstream, and 3) contribute to the recovery of westslope cutthroat trout. Additionally, the Bull Trout Conservation Strategy lists Morrell Creek drainage as an important population that contributes to Blackfoot core bull trout population; the strategy identifies the main factor limiting recovery of bull trout as the lack of high quality tributaries throughout the watershed. This project, in conjunction with the cumulative effects of other projects in the drainage, will benefit bull trout and work towards stability and recovery of the core population, which is in the public's interest.

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

This project will have no effect on water and property rights of adjacent landowners.

I. Will the project result in the development of commercial recreational use on the site? (explain):

No commercial recreational use is known to legally occur at this site.

J. Is this project associated with the reclamation of past mining activity?

No.

Each approved project applicant must enter into a written agreement with Montana Fish, Wildlife & Parks specifying terms and duration of the project. The applicant must obtain all applicable permits prior to project construction. A competitive bid process must be followed when using State funds.

IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature: _____ Date: _____

Sponsor (if applicable): _____

Submittal: **Applications must be *signed and received before* December 1 and June 1 of each year to be considered for the subsequent funding period**. Late or incomplete applications will be rejected.

Mail to:	Montana FWP Fish Management Bureau PO Box 200701 Helena, MT 59620-0701	Email:	Michelle McGree mmcgree@mt.gov (electronic submissions must be signed) For files over 10MB, use https://transfer.mt.gov

Applications may be rejected if this form is modified.

G. What public benefits will be realized from this project?

This project involves the continuation of the Blackfoot River Restoration program and the restoration of an important bull trout and westslope cutthroat stream. Public benefits include: 1) expanding suitable habitat conditions for pure westslope cutthroat trout and fluvial juvenile bull trout populations, 2) improved water quality on-site and downstream, and 3) contribute to the recovery of westslope cutthroat trout. Additionally, the Bull Trout Conservation Strategy lists Morrell Creek drainage as an important population that contributes to Blackfoot core bull trout population; the strategy identifies the main factor limiting recovery of bull trout as the lack of high quality tributaries throughout the watershed. This project, in conjunction with the cumulative effects of other projects in the drainage, will benefit bull trout and work towards stability and recovery of the core population, which is in the public's interest.

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

This project will have no effect on water and property rights of adjacent landowners.

I. Will the project result in the development of commercial recreational use on the site? (explain):

No commercial recreational use is known to legally occur at this site.

J. Is this project associated with the reclamation of past mining activity?

No.

Each approved project applicant must enter into a written agreement with Montana Fish, Wildlife & Parks specifying terms and duration of the project. The applicant must obtain all applicable permits prior to project construction. A competitive bid process must be followed when using State funds.

IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature: Ryz Mendecker Date: 5/29/19

Sponsor (if applicable): _____

Submittal: **Applications must be *signed and received before* December 1 and June 1 of each year to be considered for the subsequent funding period**. Late or incomplete applications will be rejected.

Mail to:	Montana FWP Fish Management Bureau PO Box 200701 Helena, MT 59620-0701	Email:	Michelle McGree mmcgree@mt.gov (electronic submissions must be signed) For files over 10MB, use https://transfer.mt.gov

Applications may be rejected if this form is modified.

ANSWER II C. (IN LARGER TEXT)
Morrell Creek is a fourth-order tributary to the Clearwater River, the largest tributary in the Blackfoot River watershed. Morrell Creek is a high priority tributary, bull trout core area, designated critical bull trout habitat and supports pure populations of westslope cutthroat trout. The bull trout populations are adfluvial, meaning they live in the area lakes around Seeley Lake before migrating to Morrell Creek to spawn. This is a very unique life history form and one of the few remaining populations in the west. This project, which involves eliminating a chronic source of sediment to Morrell Creek has been identified as a priority under the Collaborative Forest Landscape Restoration Program—a program identified in 2009 by the Secretary of Agriculture to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes.

Bull trout are highly sensitive to water temperature and sediment loading making Morrell Creek an important tributary in their long-term persistence as it is fed in the spawning reaches by groundwater and has a roadless headwater system which helps in securing long-term water quality and quantities. An existing road system running along the stream corridor is creating sediment issues and this project seeks to correct those issues by rerouting a segment of forest road impacting Morrell Creek. Project specifics involve decommissioning 1.6 miles of road that is located within the 300 ft buffer of Morrell Creek and immediately within the floodplain. The road segment is negatively contributing to riparian and stream functions in the form of reductions in large wood, riparian cover, and increased sedimentation, and rip rap. To accommodate continued access for the public and forest management, one-mile of road will be rebuilt in the upland zone in place of the 1.6 miles.

The proposed project involves ripping the existing road system 12 inches deep and 14 to 16 feet wide, meaning an excavator or dozer will de-compact the road surface, which will enhance infiltration and reduce runoff. The loosened surface and road fill impacting the stream channel and associated riparian areas will be pulled back to eliminate the road prism encroachment and used to recontour the slopes on the edge of the valley to a natural angle of repose or hauled off-site away from the riparian and floodplain area. Abandoned road surfaces will be also be reclaimed passively and actively. The newly loosened road surface enhances natural recolonization of vegetation, which in turn results in maintained infiltration capacity, protects against erosion and ultimately stabilizes the historic road prism. Large woody debris will also be incorporated onto the associated road surfaces and floodplains to create additional microsites to increase moisture retention, shelter young plants as they become established, and provide a source of organic material. Disturbed areas will be revegetated with a certified weed-free native streambank or appropriate upland grass seed mixture and soil amendments/erosion control will be applied as appropriate. Native cuttings, shrubs and trees will also be transplanted within riparian areas to facilitate shade and recruitment of woody debris when available. A noxious weed management plan will also be developed and implemented pre-and post-construction.

Benefits of this project include: Increased, long-term habitat quality and channel stability, improved riparian cover, shade, habitat complexity, and large wood, reduced sedimentation and rip rap.

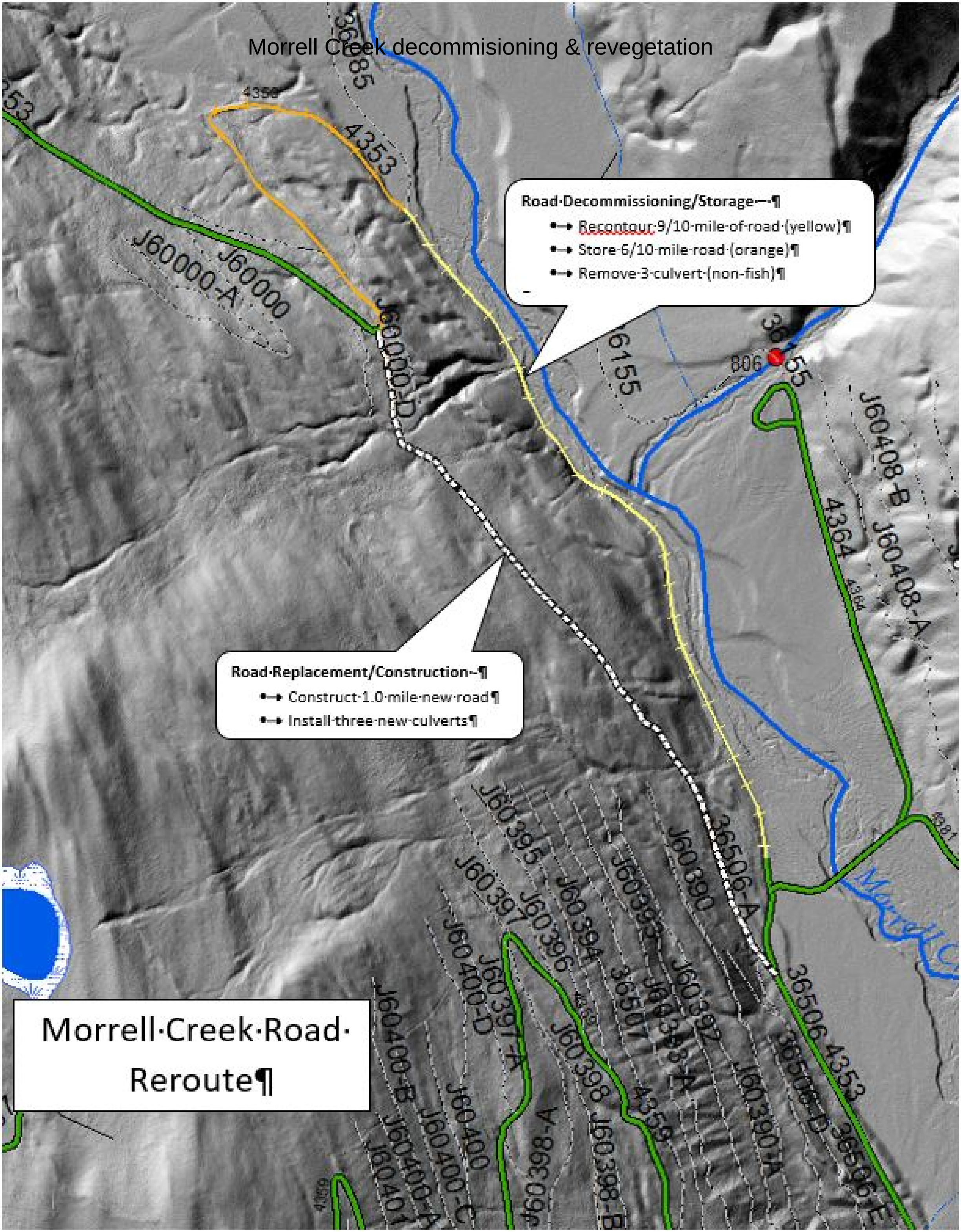
BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS
(Revised 5/29/2019)

WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FISHERIES REQUEST	IN-KIND SERVICES	IN-KIND CASH	TOTAL
Personnel								
Survey	80	hours	$100.00	$ 8,000.00			$ 8,000.00	$ 8,000.00
Design	125	hours	$100.00	$ 12,500.00			$ 12,500.00	$ 12,500.00
Staking	130	hours	$100.00	$ 13,000.00			$ 13,000.00	$ 13,000.00
Permitting	20	hours	$45.00	$ 900.00		$900		$ 900.00
Oversight	125	hours	$86.50	$ 10,812.50	4,000.00	4,000.00	2,812.50	$ 10,812.50
Labor	80	hours	$45.00	$ 3,600.00			3,600.00	$ 3,600.00
				$ 48,812.50				$ 48,812.50
Travel								
Mileage	2000	miles	$0.58	$ 1,160.00		1,160.00		$ 1,160.00
Per diem	15	days	$45.00	$ 675.00		675.00		$ 675.00
				$ 1,835.00				$ 1,835.00
Construction Materials****								
Clearing & Grubbing	LS	Each	$20,000.00	$ 20,000.00	10,000.00		$10,000	$ 20,000.00
Soil erosion & Pollution Control	LS	each	$15,000.00	$ 15,000.00	5,000.00		$10,000	$ 15,000.00
Removal of culvert	LS	each	$500.00	$ 500.00			$500	$ 500.00
Roadway Excavation & Embankment Compaction	9595	CY	$12.00	$ 115,140.00			115,140.00	$ 115,140.00
Geotextile fabric	561	SQ YD	$7.00	$ 3,927.00			3,927.00	$ 3,927.00
Aggregate Surface Course	1000	CY	$35.00	$ 35,000.00	5,000.00		30,000.00	$ 35,000.00
Drainage Dip	9	each	$300.00	$ 2,700.00	700.00		2,000.00	$ 2,700.00
Road Decomm	1.6	Mile	$15,000.00	$15,000.00	$10,000.00		5,000.00	$15,000.00
18" Culvert	466	LF	$45.00	$20,970.00	$5,000.00		15,970.00	$20,970.00
36" Culvert	78	LF	$65.00	$ 5,070.00	$1,000.00		4,070.00	$5,070.00
72" Corrugated Culvert	106	LF	$265.00	$ 28,090.00	10,000.00		18,090.00	$ 28,090.00
Hydraulic Excavator	24	HR	$140.00	$ 3,360.00	1,000.00		2,360.00	$ 3,360.00
Large Dump Truck	24	HR	$125.00	$ 3,000.00	1,500.00		1,500.00	$ 3,000.00

Placed Streambed Fill	22	CY	$60.00	$	1,320.00	320.00		1,000.00	$ 1,320.00
Seeding, Reveg & Dry Mulch	2.9	ACRE	$700.00	$	2,030.00	1,000.00		1,030.00	$ 2,030.00
Slash Filter Windrow	415	LF	$5.00	$	2,075.00	575.00		1,500.00	$ 2,075.00
Mobilization									
Mob/demob	1	lump sum	$15,000.00	$	15,000.00	5,000.00		10,000.00	$ 15,000.00
			TOTALS	$	338,829.50	$ 60,095.00	$ 6,735.00	$ 271,999.50	$ 338,829.50

MATCHING CONTRIBUTIONS

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL	Secured? (Y/N)
US Forest Service	$ -		$ 261,999.50	YES
Big Blackfoot Chapter of Trout Unlimited	$ 6,735.00	$ 10,000.00	$ 16,735.00	YES


Morrell Creek decommisioning & revegetation
Road·Decommissioning/Storage—·¶
Recontour·9/10·mile·of·road·(yellow)¶
Store·6/10·mile·road·(orange)¶
Remove·3·culvert·(non-fish)¶
Road·Replacement/Construction–¶
Construct·1.0·mile·new·road¶
Install·three·new·culverts¶
Morrell·Creek·Road·
Reroute¶
36085
4353
J60000
J60000-A
J60000-D
806
36155
J60408-B
J60408-A
4364
36506-A
J60390
J60393
J60395
J60394
J60396
J60397
J60397-A
J60398
J60398-A
J60398-B
J60392
J60390-A
J60400
J60400-A
J60400-B
J60400-C
J60400-D
J60401
36507
4359
36506 4353
36506-D
36506-E
Morrell Cr

MORRELL CREEK ROAD REROUTE PROJECT AREA PHOTOS

Morrell Creek decommisioning & revegetation

FWP.MT.GOV

THE **OUTSIDE** IS IN US ALL.

Region 2 Headquarters
3201 Spurgin Road
Missoula, MT 59804
Phone 406-542-5506
May 28, 2019

Future Fisheries Improvement Program
C/O Michelle McGree
Montana Fish, Wildlife & Parks
Helena, MT 59620

RE: Support Letter
Big Blackfoot Trout Unlimited FFIP Proposal – Upper Morrell Creek

Dear Review Committee Members:

This letter in written in support of Trout Unlimited's application for Future Fisheries Improvement Program funding on upper Morrell Creek near Seeley Lake. Morrell Creek and its native fish populations are truly unique resources in western Montana and the proposed project is another major step in improving this valuable watershed. Morrell Creek is a regional priority for protection and restoration because of its native fish assemblage, cold water, and high quality habitat. The proposed project enhances these values and will complement numerous recent projects involving fish passage, channel improvements, irrigation diversion upgrades, and large-scale public land acquisition.

The proposed project involves removal and relocation of a riparian road segment and other system improvements in the headwater reach that lies immediately upstream of core native trout spawning and rearing habitat. This project has been recognized as a priority among aquatic resource managers and project partners for some time (> 2 decades). The road segment is known to be a significant source of fine sediment and continues to limit riparian function. Fortunately, there is currently an opportunity to remedy these issues by moving the road and re-naturalizing the riparian corridor.

Morrell Creek is one of six 'core' tributary drainages in the Blackfoot watershed that support viable migratory bull trout populations. Morrell Creek is unique among these populations, as it supports one of the only viable *adfluvial* (lake-migrant) bull trout populations in the upper Clark Fork Basin. Migratory and stream-resident Westslope cutthroat trout are also prevalent in this stream system.

Fortunately, an established long-term fisheries and aquatic habitat monitoring baseline already exists in the Morrell Creek basin. This baseline not only guides the prioritization of enhancement projects, but is also used to inform management decisions and track fisheries and aquatic response. Monitoring effort and commitment will continue on Morrell Creek and reflects the importance of this watershed for native trout and public fishery resources.

This project is certainly worthy of Future Fisheries funding and nicely complements major, recent investments in the Morrell Creek watershed. Please don't hesitate to contact me if you would like additional information regarding past, ongoing and planned projects or associated monitoring associated with Morrell Creek.

Sincerely,

W. Ladd Knotek
Fisheries Management Biologist

USDA United States Department of Agriculture | Forest Service | Lolo National Forest | Missoula Ranger District | Building 24-A, Fort Missoula | Missoula, MT 59804-7297 | 406 329-3750

Date: May 28, 2019

To the review committee,

Please find this letter in my support of the Morrell Road Relocation project. This project is an important project within the Clearwater River system, a tributary to the Blackfoot River.

The Morrell Creek watershed is an important bull trout stream that supports an adfluvial bull trout and resident pure westslope cutthroat trout population. The bull trout in this stream reside in Seeley and Salmon Lakes as adults and migrate into Morrell Creek to spawn. Morell Creek headwaters initiate within a roadless headwater on the Swan face. This condition allows for the establishment and security of high water qualities and quantities. Such that the Forest Service recognizes Morrell Creek and a large portion of the Clearwater watershed as a Priority Watershed under the Inland Native Fish Strategy. In addition, the Fish and Wildlife Service has designated the stream as bull trout Critical Habitat.

This project removes approximately 1.5 miles of road, of which, approximately 0.9 is located within a 300 foot buffer of the stream. Of the 0.9 miles, 0.3 is located immediately along the streambanks of Morrell Creek. Collectively these portions of road are negatively contributing to riparian and stream functions in the form of reductions in large wood, riparian cover, and increased sedimentation, and rip rap. This project also includes constructing approximately 1.0 miles of new road higher on the hillside to project public access and future management of the National Forest.

The relocation of this road will increase the long-term habitat quality and channel stability by increasing riparian cover, stream shade, habitat complexity, large wood inputs, and will reduce road surface sedimentation and rip rap. In addition, long-term road maintenance cost will be reduced as this road segment will be removed from the floodplain.

This project may seem small in comparison to some, however, its location above key westslope cutthroat and bull trout habitat makes it significant. This project also compliments past and future projects; such as culvert removals and upgrades for fish passage, road decommissioning, irrigation improvements, and small dam removals. Clearing of the new road corridor from this project will generate much needed material, trees boles and rootwads, for the upcoming 5,500 foot stream restoration project in an adjacent stream reach. Together these projects will create a positive cumulative impact within these watersheds.

Thank you for the consideration of this project. Please feel free to contact me for more information. Email shane.hendrickson@usda.gov or Phone 406-329-3727.

Sincerely,

/s/Shane R. Hendrickson
East Zone Fisheries Biologist

GOVERNMENT FURNISHED

- RIPRAP MATERIAL SOURCE
- EMBANKMENT MATERIAL SOURCE
- WASTE SITE
- SLASH FILTER WINDROW MATERIAL SOURCE
- STREAMBED SIMULATION MATERIAL SOURCE

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
REGION ONE

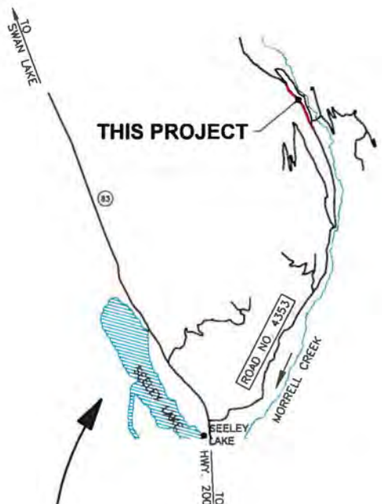
CONSTRUCTION PLANS FOR

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353

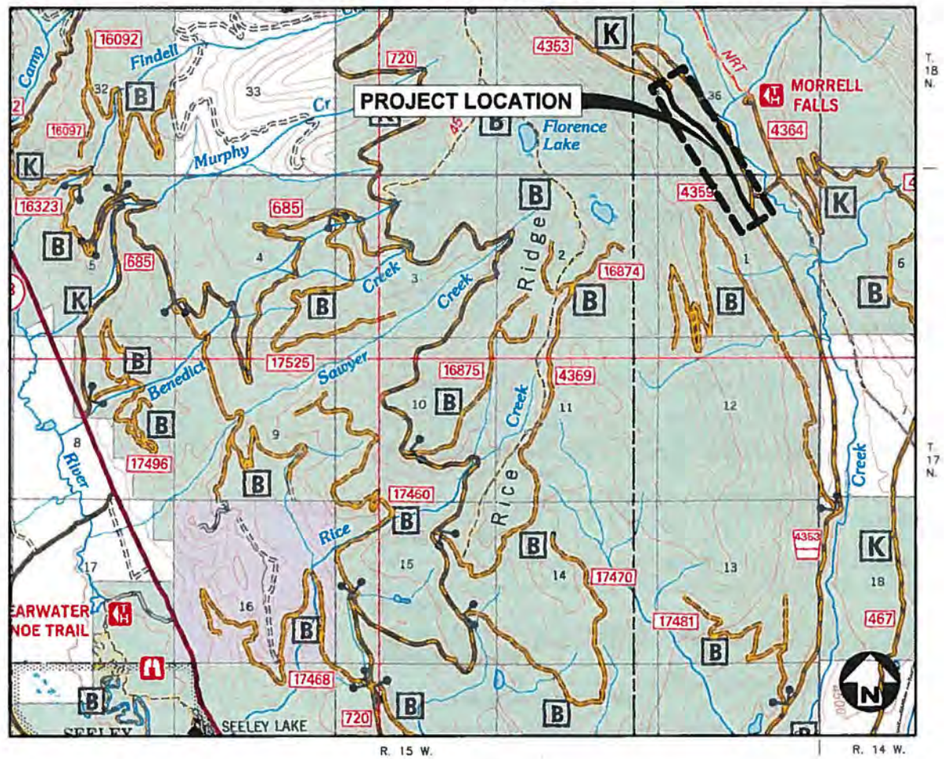
LOLO NATIONAL FOREST
SEELEY LAKE RANGER DISTRICT
MISSOULA COUNTY, MONTANA

90% SUBMITTAL

SECTION 36, TOWNSHIP 18 NORTH, AND RANGE 15 WEST &
SECTION 1, TOWNSHIP 17 NORTH, AND RANGE 15 WEST



LOCATION MAP
NOT TO SCALE



VICINITY MAP
1" = 5000'

SHEET INDEX

PROJECT: 1-18258
DATE: MARCH 8, 2019

APPROVED:

FOREST SUPERVISOR
LOLO NATIONAL FOREST — DATE

APPROVED:

FOREST ENGINEER
LOLO NATIONAL FOREST — DATE

RECOMMENDED:

SEELEY LAKE DISTRICT RANGER
LOLO NATIONAL FOREST — DATE

PLANS PREPARED BY:

BRENT PILON, P.E.

QA/QC BY:

JEREMIAH THEYS, P.E.

DRAFT

NOTE:
DRAWING SCALE IS ONLY ACCURATE WHEN PLANS ARE PLOTTED ON 11" X 17" (TABLOID)-SIZED PAPER.

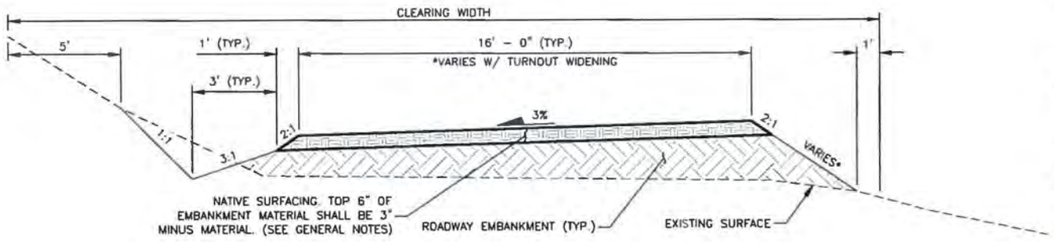
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

NO.	REVISION DESCRIPTION	BY	DATE
1			
2			
3			
4			
5			
6			

SET NO.

SHEET NO. 1

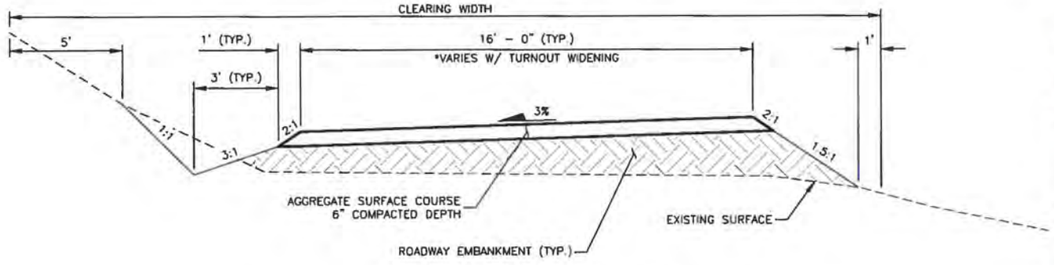
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-1-Cover.dwg



*SEE ROADWAY CROSS-SECTIONS ON SHEETS 15-29
NATIVE SURFACING ALONG ENTIRE ROADWAY WITH EXCEPTIONS OF AGGREGATE SURFACED SECTIONS.
(SEE GENERAL NOTES THIS SHEET)

TYPICAL ROADWAY SECTION

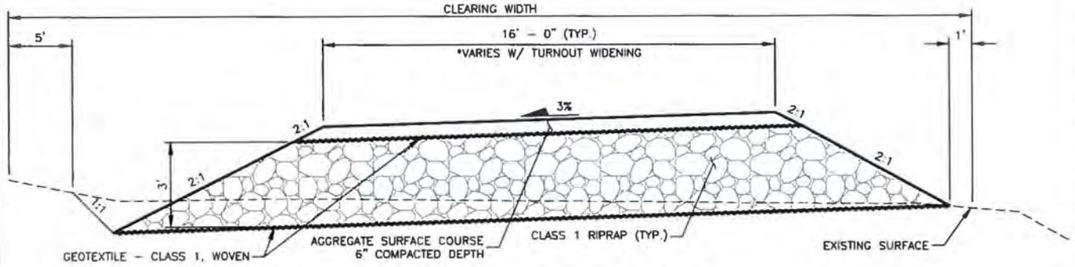
NOT TO SCALE



*SEE ROADWAY CROSS-SECTIONS ON SHEETS 15-29
AGGREGATE SURFACING STA. 16+70.41 TO STA. 18+70.41 AND STA. 45+08.45 TO STA. 47+08.45

TYPICAL SURFACED ROADWAY SECTION

NOT TO SCALE



*SEE ROADWAY CROSS-SECTIONS ON SHEETS 15-29
SURFACING WITH 3' RIPRAP STA. 43+61.25 TO STA. 44+77.18

TYPICAL 3' RIPRAP ROADWAY SECTION

NOT TO SCALE

*ESTIMATED EARTHWORK QUANTITIES	
CUT (CUBIC YARDS)	****FILL (CUBIC YARDS)***
9595	8400
IN-PLACE QUANTITIES	
****WORK INCLUDED IN PAY ITEM 20403***	

IF ADDITIVE ALTERNATE (30207A – AGGREGATE SURFACE COURSE) IS AWARDED, FILL QUANTITY SHALL BE REDUCED BY AGGREGATE SURFACE COURSE QUANTITY LISTED IN SCHEDULE

GENERAL NOTES:

SPECIFICATIONS:
MATERIALS AND CONSTRUCTION OF THIS PROJECT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14 (U.S. CUSTOMARY UNITS), AND THE FOREST SERVICE SUPPLEMENTAL SPECIFICATIONS (FSSS'S).

DESIGN SPECIFICATION:
DESIGN SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF AASHTO GUIDELINES FOR GEOMETRIC DESIGN OF VERY LOW VOLUME ROADS AS MODIFIED BY THE USFS.

CORRUGATED STEEL PIPE:
THE 18"ø AND 36"ø ROUND EQUIVALENT CULVERTS SHALL BE 2 ⅔" X ½" CORRUGATIONS, 0.064" THICKNESS (16 GAGE). THE 72"ø CULVERTS SHALL BE 3" X 1" OR 5" X 1" CORRUGATIONS, 0.064" THICKNESS (16 GAGE). DESIGN SHALL CONFORM TO HL-93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CURRENT EDITION WITH CURRENT INTERIMS.

THE CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS AND CONDITIONS PRIOR TO ORDERING MATERIALS.

CONTRACTOR QUALITY CONTROL:
REFER TO FP-14 SECTION 153 AND SUPPLEMENTAL SPECIFICATION 153 FOR TESTING AND SUBMITTAL REQUIREMENTS.

EROSION CONTROL:
SUBMIT AN EROSION CONTROL PLAN FOR ALL WORK AT STREAM CROSSING AND LIVE WATER AREAS TO THE C.O. FOR REVIEW PRIOR TO BEGINNING ANY WORK. PROVIDE METHODS TO PREVENT RUNOFF FROM THE CONSTRUCTION SITE FROM DIRECTLY ENTERING INTO LIVE STREAMS.

SEEDING:
SEEDING IS REQUIRED ON ALL NEW ROAD CONSTRUCTION SLOPES AND IN ALL AREAS OF DISTURBANCE.

SEEDING IS ALSO REQUIRED ON AREAS OF CHANNEL EXCAVATION AND EMBANKMENT ABOVE THE BANKFULL ELEVATION. THIS WORK IS PAID UNDER ITEM 62504. APPLY SEED PER FSSS 625.

ROADWAY SURFACING:
NATIVE SURFACING SHALL BE PAID UNDER ITEM 20403. TOP 6" OF EMBANKMENT MATERIAL SHALL BE SORTED AND SCREENED TO BE 3" MINUS MATERIAL.

AGGREGATE SURFACING FOR ADDITIVE ALTERNATE IS THE REMAINDER OF SURFACING REQUIRED TO SURFACE ENTIRE ROADWAY.

CLEARING & GRUBBING:
TOPS, LIMBS, & SLASH: CONTRACTOR SHALL SALVAGE ALL APPROPRIATELY SIZED TOPS, LIMPS, AND SLASH FROM CLEARING & GRUBBING TO BE SCATTERED AND USED FOR SLASH FILTER WINDROWS. IF ADDITIONAL SLASH MATERIAL IS NEEDED, THE C.O. WILL DESIGNATE A BORROW SITE WITHIN 1 MILE OF THE PROJECT SITE.

STUMPS: CONTRACTOR WILL BE ALLOWED TO REMOVE, CHIP, OR BURY STUMPS RESULTING FROM CLEARING AND GRUBBING. IF THE CONTRACTOR ELECTS TO BURY STUMPS, REQUIREMENTS FROM FSSS 203 SHALL BE FOLLOWED.

MERCHANTABLE TIMBER SHALL BE SALVAGED WHOLE (INCLUDING TOPS & ROOT MASS) AND STOCKPILED AT THE LOCATIONS SHOWN ON THE PLANS OR AS DESIGNATED BY THE C.O.

ESTIMATED QUANTITIES*

ITEM NO.	*DESCRIPTION*	*METHOD OF MEASUREMENT*	*UNIT*	*QUANTITY*
15101	MOBILIZATION	LSQ	LS	1
15201	CONSTRUCTION SURVEY AND STAKING, METHOD 2, TOLERANCE CLASS B	LSQ	LS	1
15713	SOIL EROSION AND POLLUTION CONTROL	LSQ	LS	1
20101	CLEARING AND GRUBBING	LSQ	LS	1
20301	REMOVAL OF EXISTING CULVERT, METHOD A	LSQ	LS	1
20403	ROADWAY EXCAVATION AND EMBANKMENT, COMPACTION PLACEMENT METHOD 2 (GOV'T FURNISHED MATERIAL SOURCE), TOLERANCE CLASS D	CQ	CY	9595
20404	DRAINAGE EXCAVATION, DRAIN DIP, TOLERANCE CLASS D	AQ	EA	9
20701	GEOTEXTILE SEPARATION FABRIC, CLASS 1, WOVEN	CQ	SY	561
20803	STRUCTURAL BACKFILL	CQ	CY	341
25101	PLACED RIPRAP, CLASS 1 (GOV'T FURNISHED MATERIAL SOURCE)	CQ	CY	356
30207	AGGREGATE SURFACE COURSE, COMPACTION METHOD 2	CQ	CY	195
60201a	18" DIAMETER CMP CULVERT, 0.064" THICKNESS	CQ	LF	466
60201b	36" EQUIVALENT DIAMETER CMP PIPE ARCH CULVERT, 0.064" THICKNESS	CQ	LF	78
60201c	72" DIAMETER CMP CULVERT, 0.064" THICKNESS	CQ	LF	106
62201a	EQUIPMENT RENTAL, HYDRAULIC EXCAVATOR WITH THUMB	AQ	HR	24
62201b	EQUIPMENT RENTAL, LARGE DUMP TRUCK	AQ	HR	24
62504	SEEDING, DRY METHOD	CQ	ACRE	2.90
64801	PLACED STREAMBED SIMULATION MATERIAL, BED CLASS 10 (GOV'T FURNISHED SOURCE)	CQ	CY	22
67050	SLASH FILTER WINDROW (GOV'T FURNISHED MATERIAL SOURCE)	CQ	LF	415
	ADDITIVE ALTERNATE			
30207A	AGGREGATE SURFACE COURSE, COMPACTION METHOD 2	CQ	CY	1630

****INFORMATIONAL ONLY - NOT FOR BIDDING PURPOSES - REFER TO SCHEDULE***

90% SUBMITTAL

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

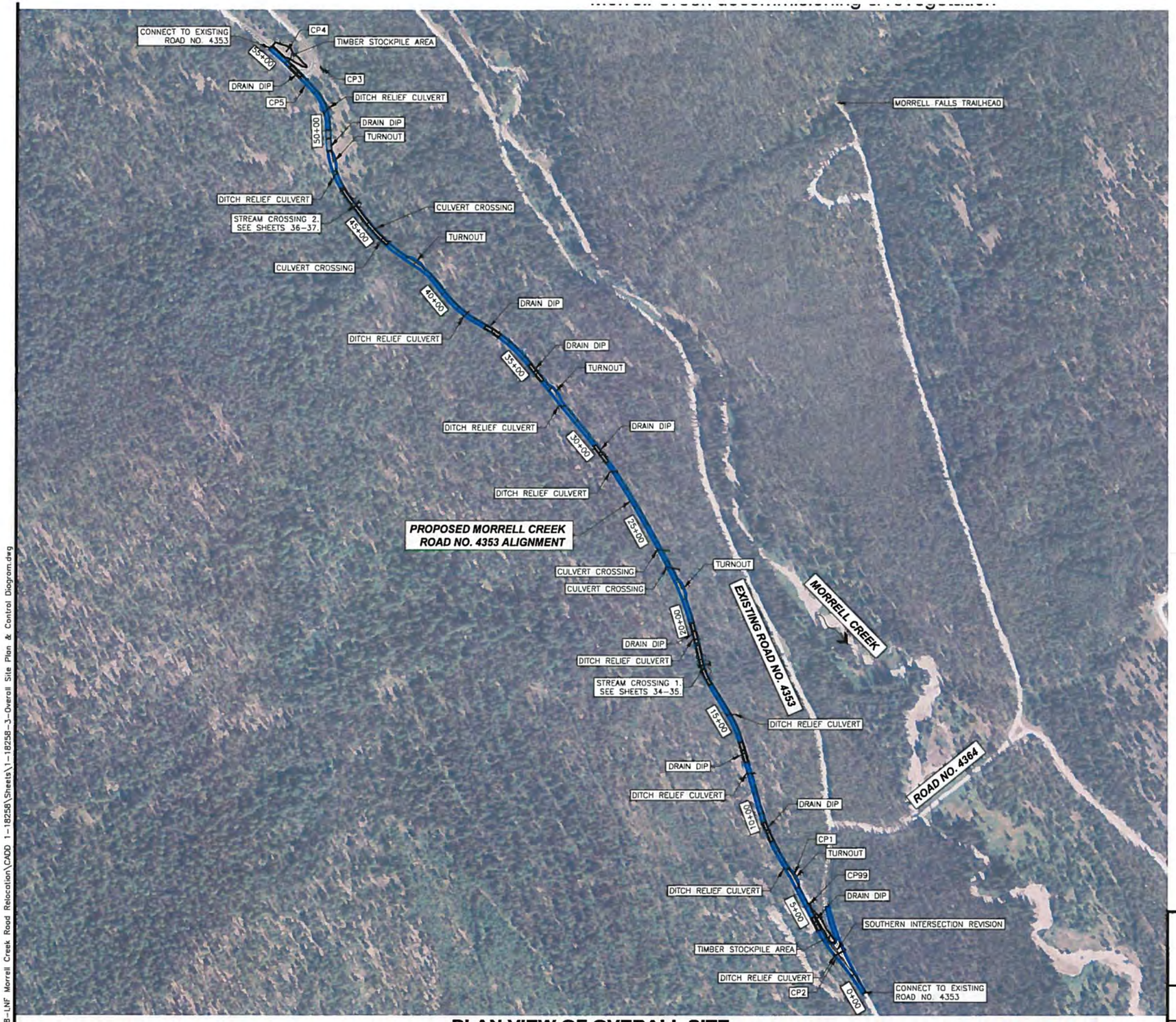
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

TYPICAL ROADWAY SECTIONS & QUANTITIES

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 2 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-2-Typical Roadway Sections & Quantities.dwg



PLAN VIEW OF OVERALL SITE

0 250 500

SCALE IN FEET

90% SUBMITTAL

CONTROL POINT COORDINATE TABLE

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	1123390.78	988413.60	4692.65	REBAR W/RPC
CP2	1122997.31	988620.08	4675.21	REBAR W/RPC
CP3	1127262.24	986116.36	4912.23	REBAR W/RPC
CP4	1127338.61	985952.56	4915.68	REBAR W/RPC
CP5	1127175.23	986041.39	4927.77	REBAR W/RPC
CP99	1123248.21	988487.18	4681.36	REBAR W/RPC

SURVEY NOTES:

1. RPC = RED PLASTIC CAP
2. THE FOREST SERVICE PROVIDED LIDAR DATA ACQUIRED IN TWO SEPARATE SURVEYS IN 2013 AND 2014. THE 2013 LIDAR DATA WAS ACQUIRED BY WSI AND SET TO MONTANA STATE PLANE ZONE 2500 WITH HORIZONTAL DATUM OF NAD83 AND VERTICAL DATUM OF NAVD88 (GEOID12A) IN US SURVEY FEET. THE 2014 LIDAR DATA ACQUIRED BY QSI AND SET TO UTM ZONES 11 NORTH AND 12 NORTH WITH HORIZONTAL DATUM OF NAD83 AND VERTICAL DATUM OF NAVD88 (GEOID03) IN METERS. BOTH SURVEYS WERE IMPORTED WITH THEIR RESPECTIVE PARAMETERS AND EXPORTED TO MONTANA STATE PLANE ZONE 2500 GRID COORDINATES. ADDITIONAL SURVEY WAS COMPLETED BY GREAT WEST ENGINEERING AND PROCESSED IN CORRESPONDING GRID COORDINATES.

PROJECT NOTES:

1. EXISTING ROAD NO. 4353 SHALL STAY OPEN TO TRAFFIC DURING THE CONSTRUCTION OF THE NEW SECTION OF ROAD NO. 4353.
2. A SOIL INVESTIGATION HAS NOT BEEN CONDUCTED ON THIS SITE.
3. REFERENCE CROSS-SECTIONS ON SHEETS 15-29 FOR FURTHER ROADWAY DESIGN INFORMATION.
4. CONTRACTOR SHALL USE SUITABLE ON-SITE MATERIAL FROM ROADWAY EXCAVATION FOR ROADWAY EMBANKMENT CONSTRUCTION. THE MATERIAL SHALL BE APPROVED BY C.O. BEFORE PLACEMENT. COMPACT ROADWAY EMBANKMENT PER FSSS 204 PLACEMENT METHOD 2. NATIVE SURFACING SHALL BE PAID UNDER ITEM 20403.
5. QUANTITIES ARE PROVIDED FOR INFORMATION ONLY AND ARE IN-PLACE QUANTITIES. NO SHRINKAGE OR SWELL FACTORS HAVE BEEN APPLIED. CONTRACTOR SHALL VERIFY QUANTITIES.
6. CONTRACTOR TO DISPOSE OF EXCESS AND/OR UNSUITABLE MATERIAL IN A GOVERNMENT FURNISHED WASTE SITE LOCATED BY THE C.O. WITHIN 1 MILE OF THE PROJECT SITE.
7. CONTRACTOR MAY SALVAGE EXISTING ROCK DURING ROADWAY EXCAVATION FOR USE AS RIPRAP MATERIAL. ALL SALVAGED ROCK MUST MEET FSSS 705.
8. ALL WORK WITHIN STREAMS SHALL BE COMPLETED BETWEEN JULY 15TH AND AUGUST 31ST TO ACCOMMODATE THE FISH WINDOW.
9. NECESSARY EXCAVATION AND SHAPING FOR THE CMP CATCH BASINS SHALL BE INDIRECTLY PAID UNDER THE APPLICABLE ROADWAY EXCAVATION AND EMBANKMENT BID ITEM. RIPRAP FOR CATCH BASINS PAID UNDER THE APPLICABLE RIPRAP BID ITEM.

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

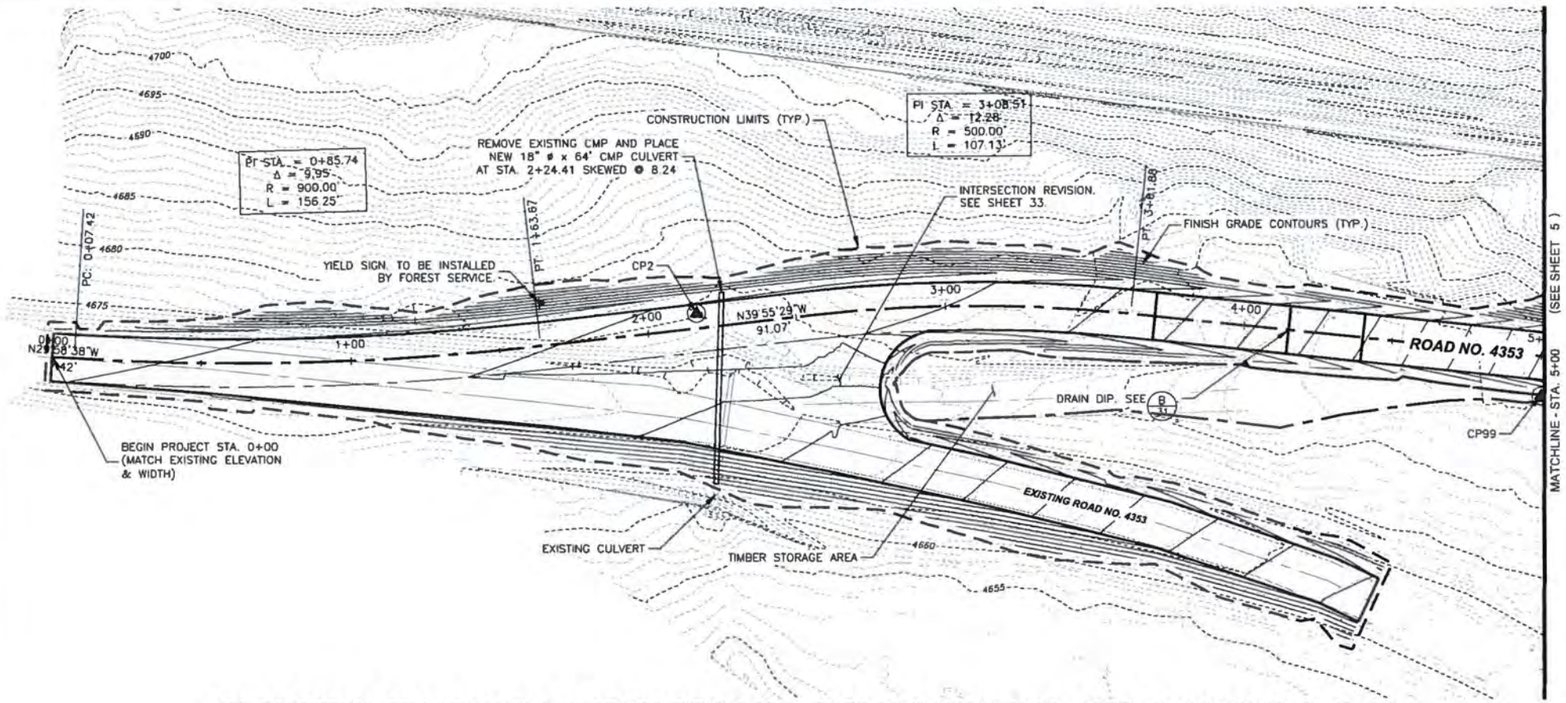
OVERALL SITE PLAN & CONTROL DIAGRAM

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME				
DRAWN: BLP	DRAWING CHECKED: JJT				

SHEET NO. 3 OF 38

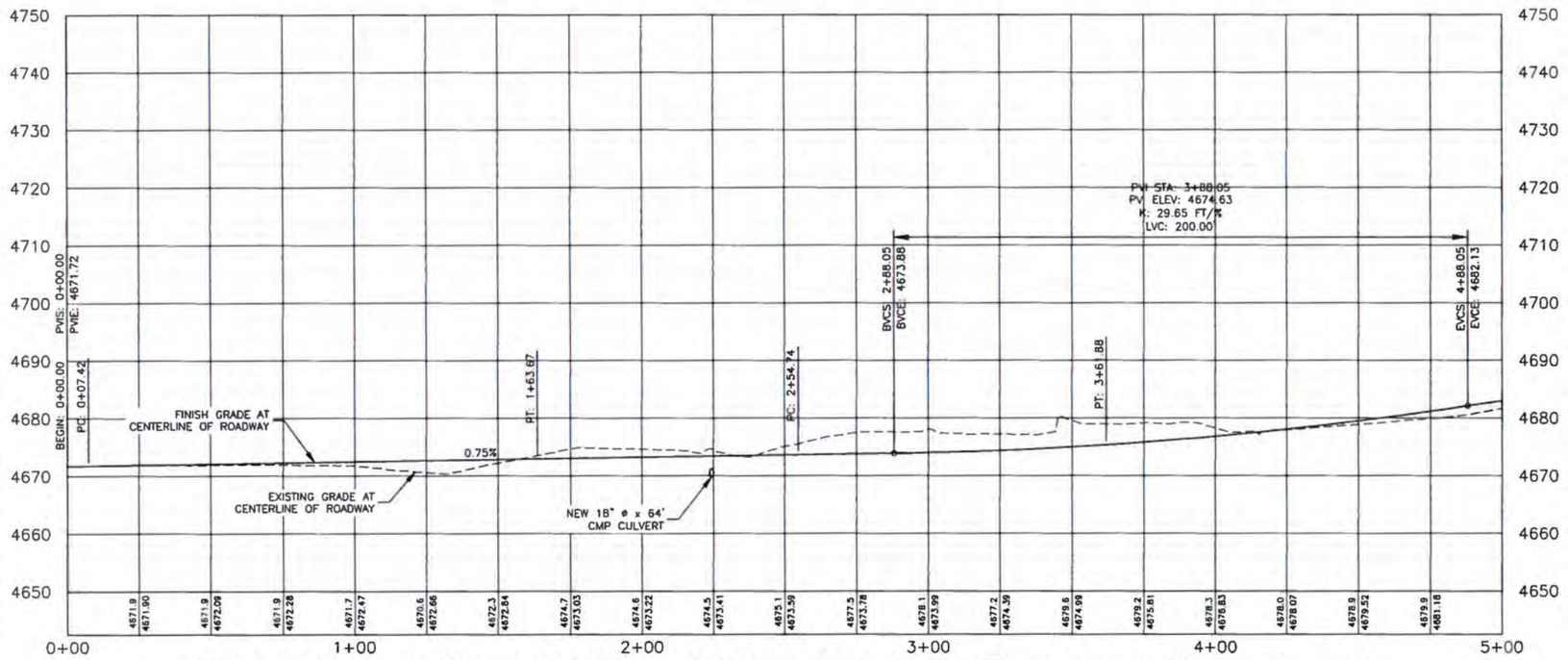
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-3-Overall Site Plan & Control Diagram.dwg

90% SUBMITTAL



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 0+00 TO STA. 5+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 0+00 TO STA. 5+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA DEPARTMENT OF AGRICULTURE
REGION ONE

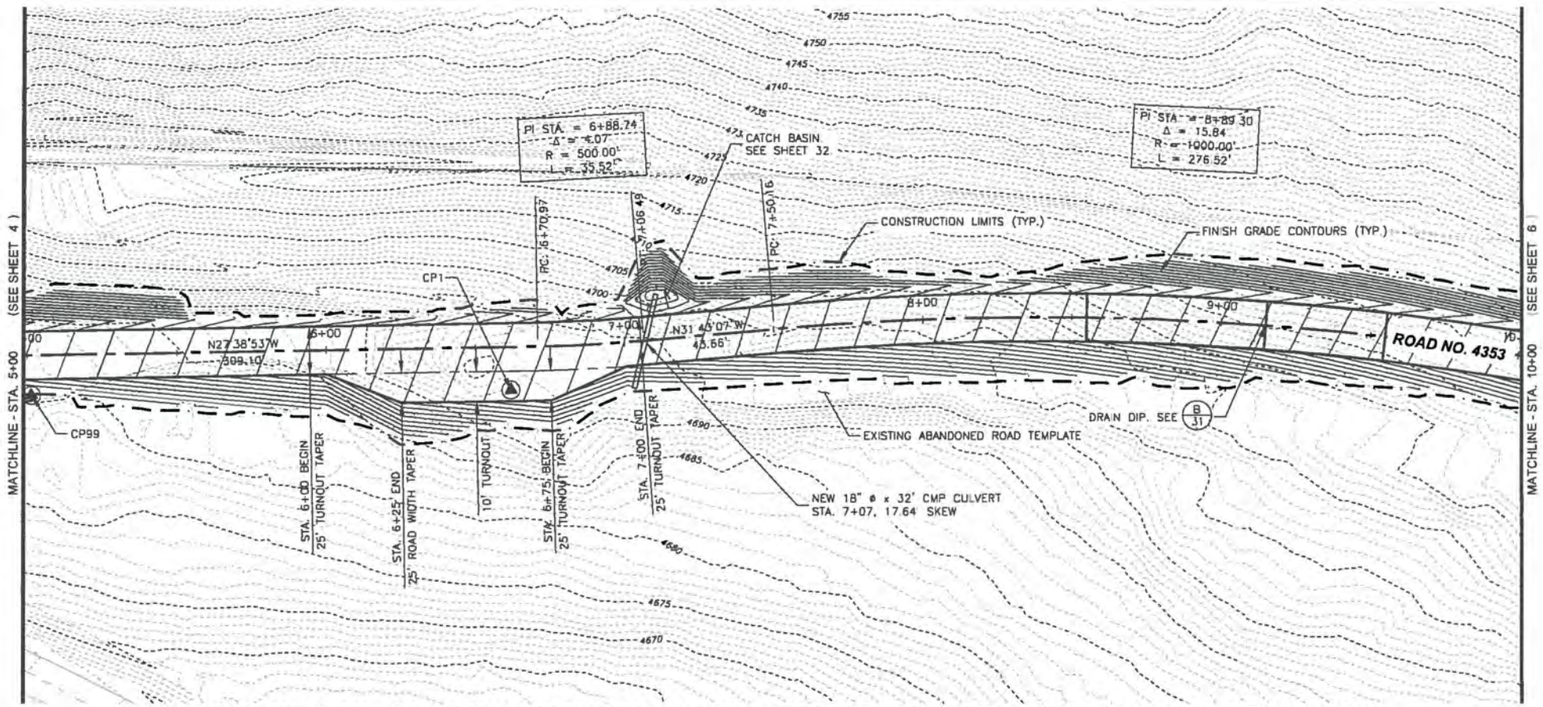
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

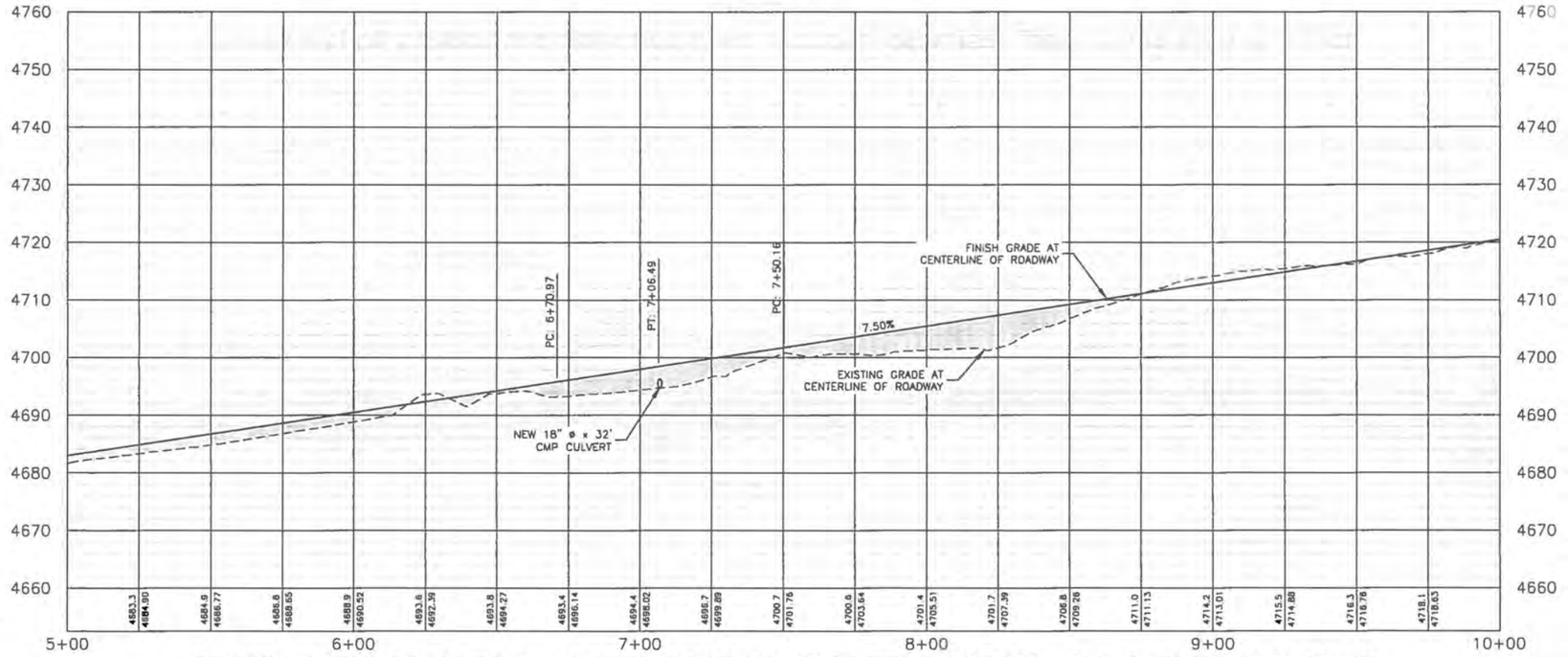
SHEET NO. 4 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-4-Road No. 4353 Plan & Profile.dwg



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 5+00 TO STA. 10+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 5+00 TO STA. 10+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

90% SUBMITTAL

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

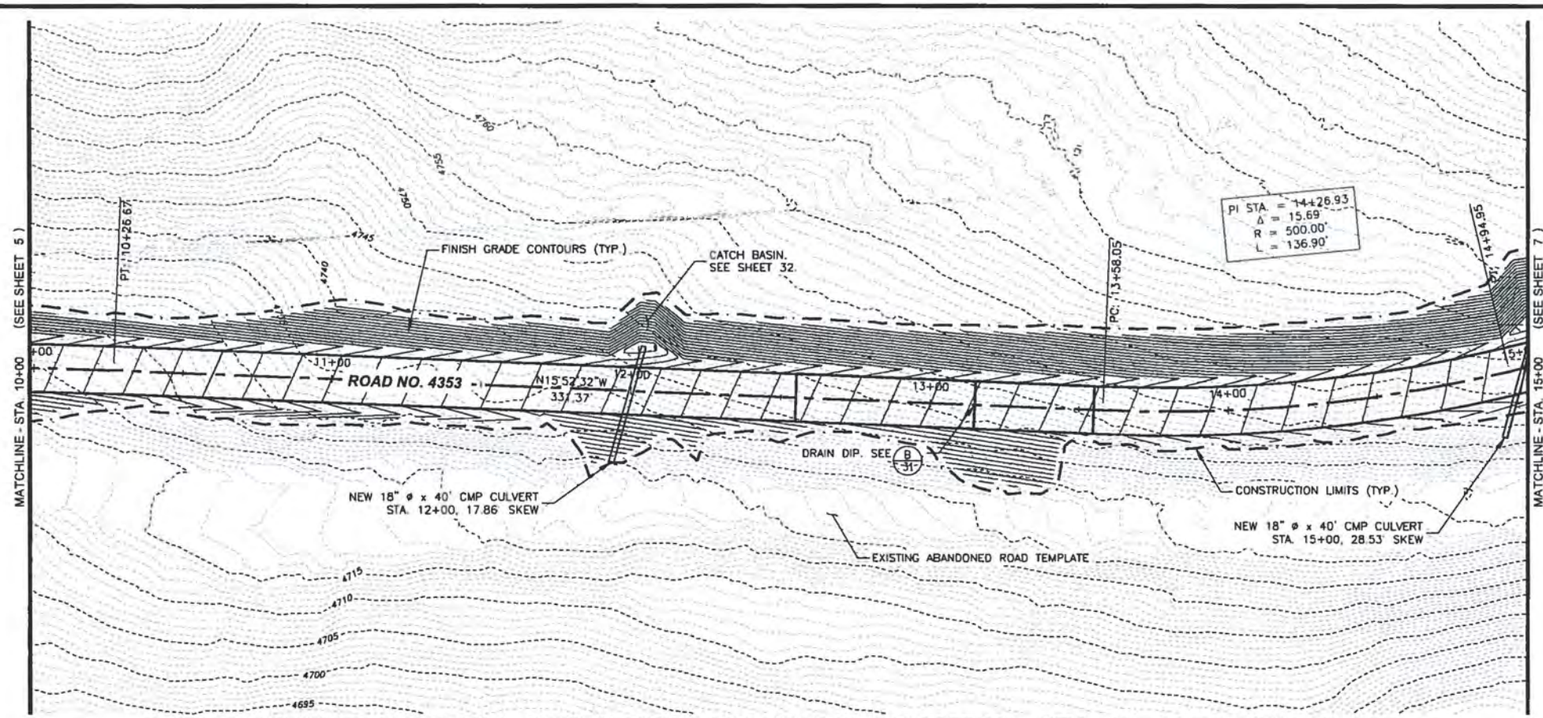
ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 5 OF 38

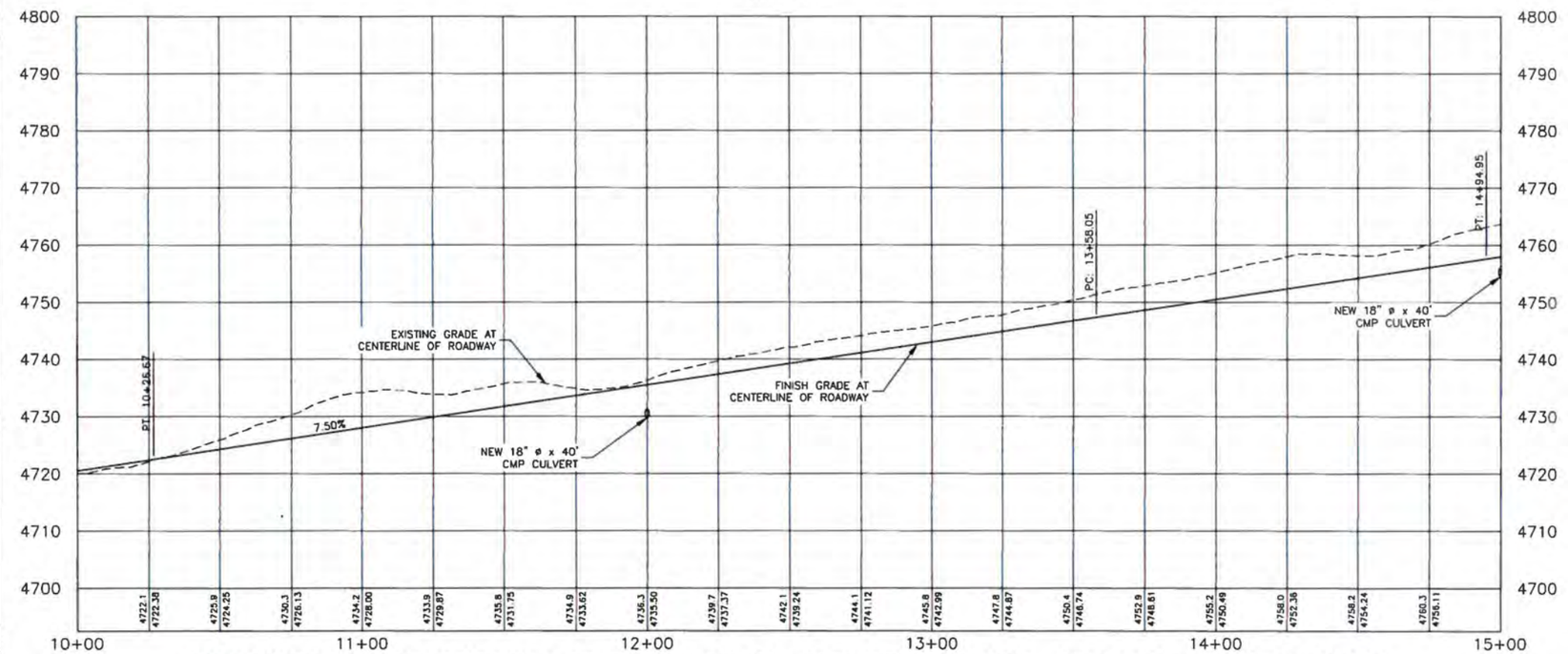
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-5-Road No. 4353 Plan & Profile.dwg

90% SUBMITTAL



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 10+00 TO STA. 15+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 10+00 TO STA. 15+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-6-Road No 4353 Plan & Profile.dwg

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

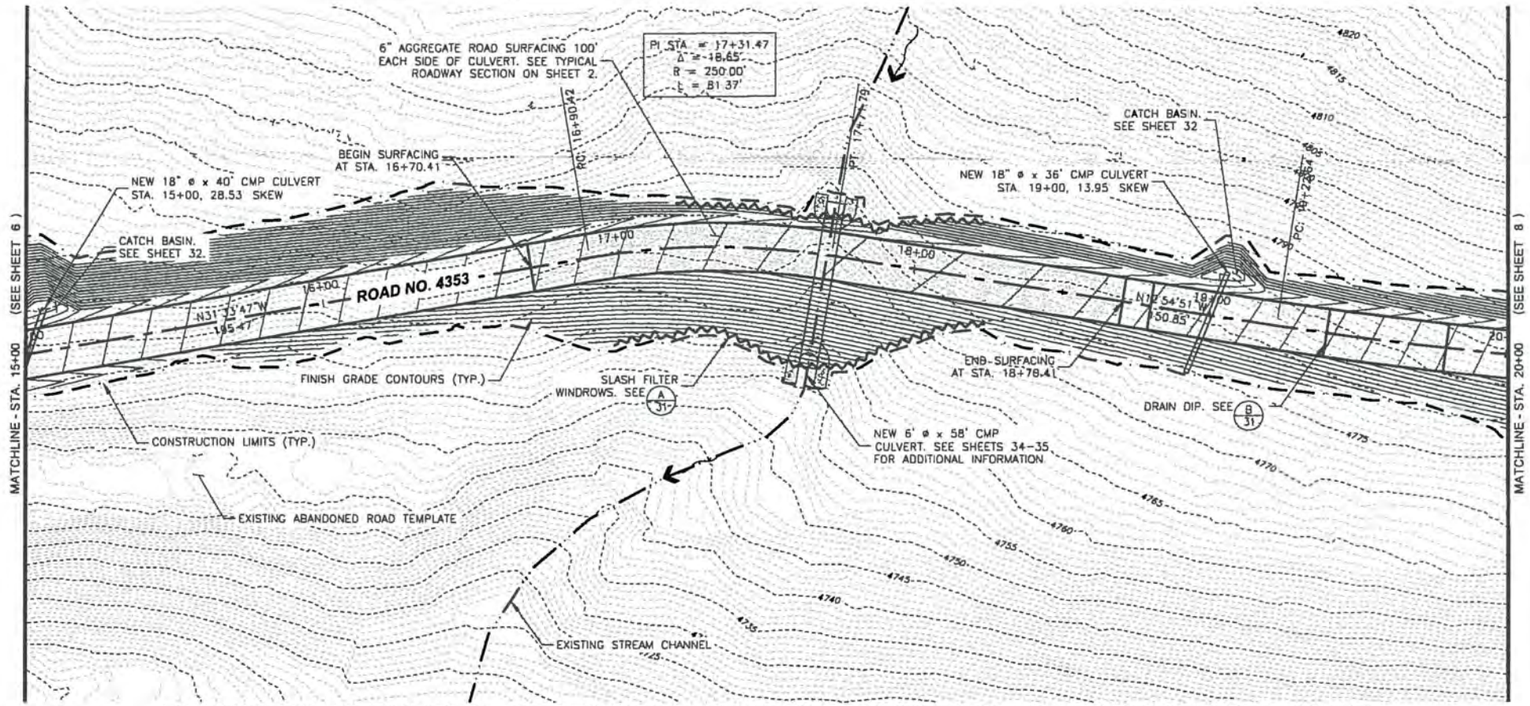
MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

ROAD NO. 4353 PLAN & PROFILE

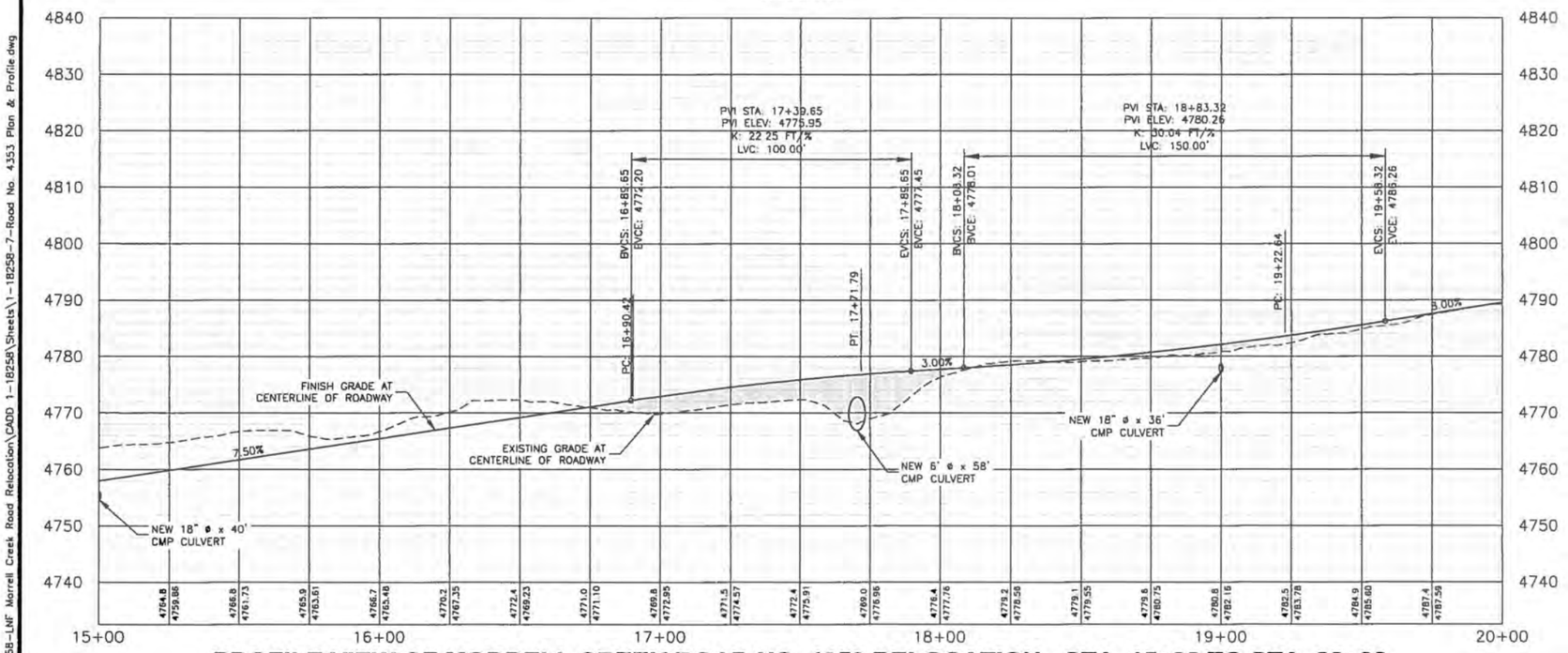
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 6 OF 38



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 15+00 TO STA. 20+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 15+00 TO STA. 20+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

90% SUBMITTAL

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

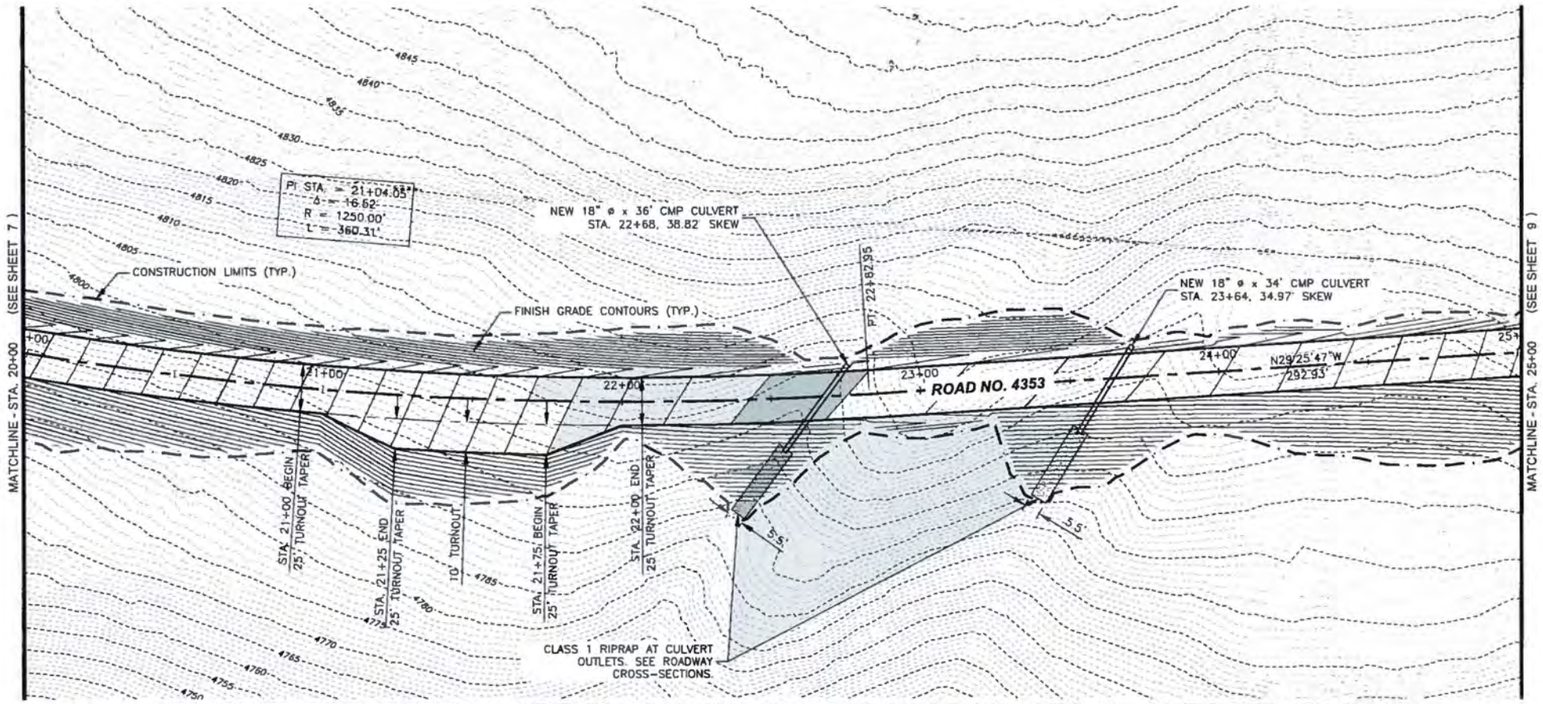
ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 7 OF 38

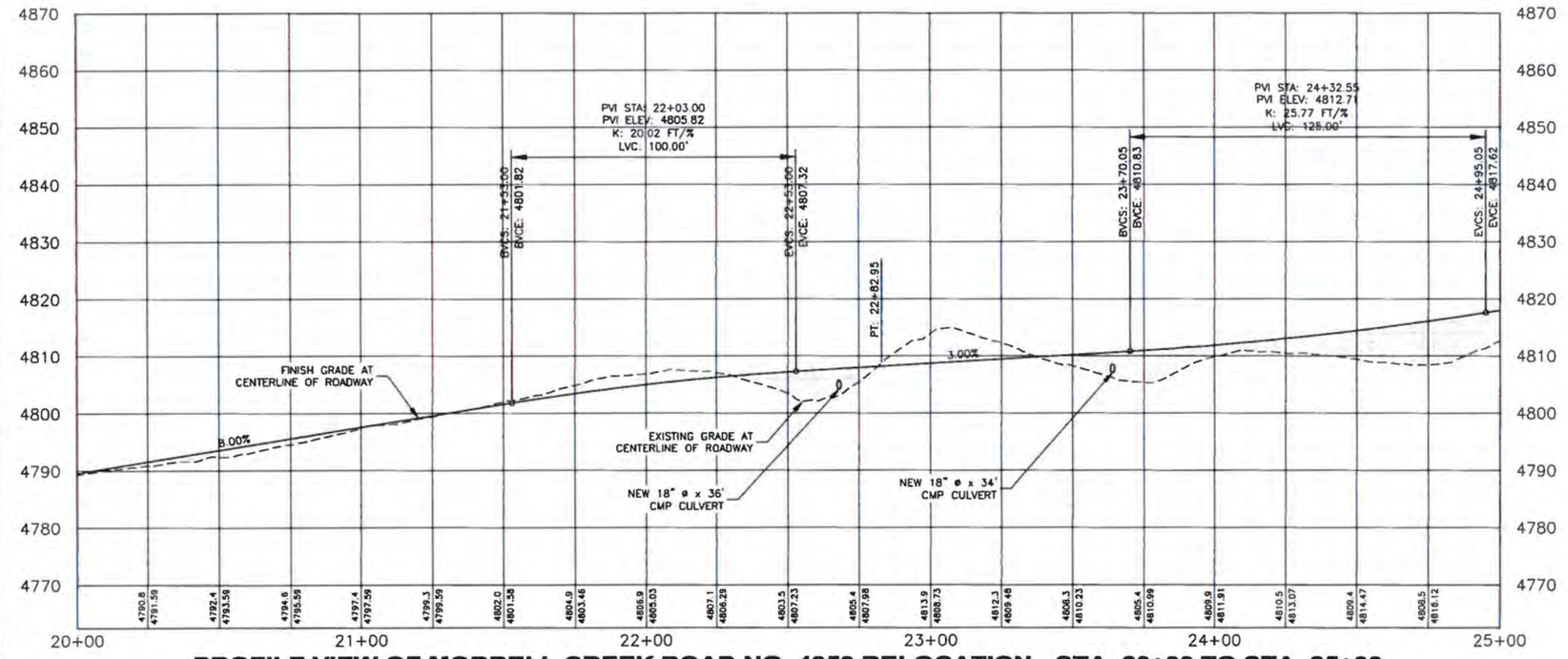
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-7-Road No. 4353 Plan & Profile.dwg

90% SUBMITTAL



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 20+00 TO STA. 25+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 20+00 TO STA. 25+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

PREPARED BY
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

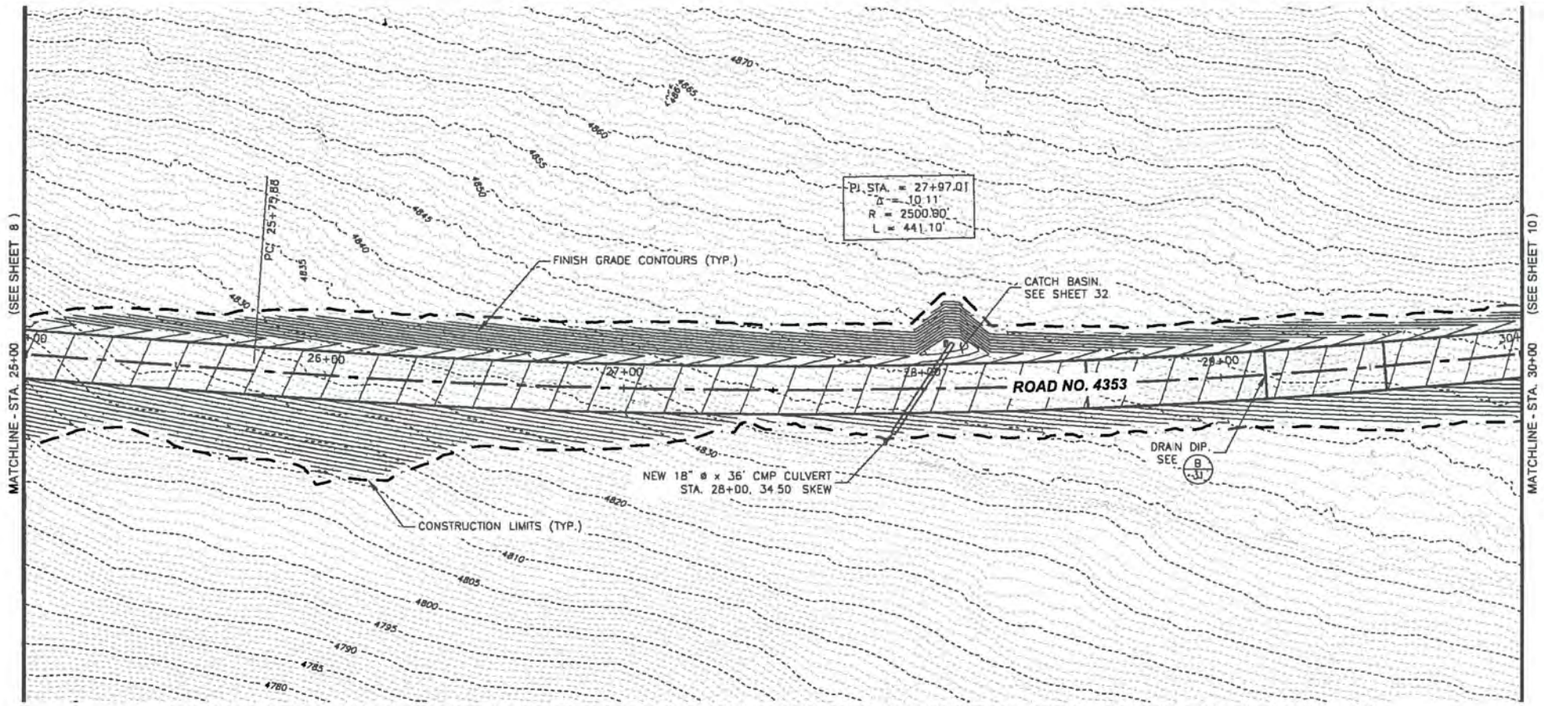
ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME				
DRAWN: BLP	DRAWING CHECKED: JJT				

SHEET NO. 8 OF 38

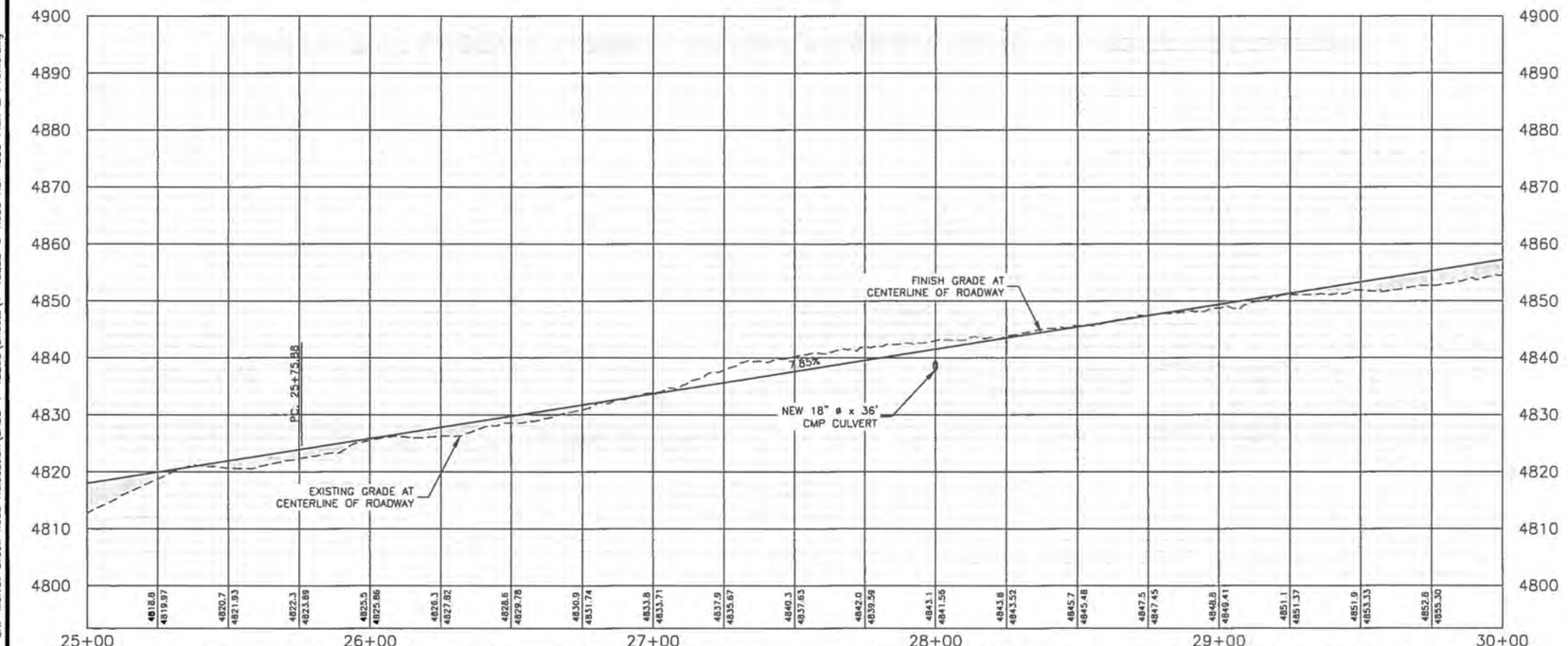
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-8-Road No. 4353 Plan & Profile.dwg

90% SUBMITTAL



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 25+00 TO STA. 30+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 25+00 TO STA. 30+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

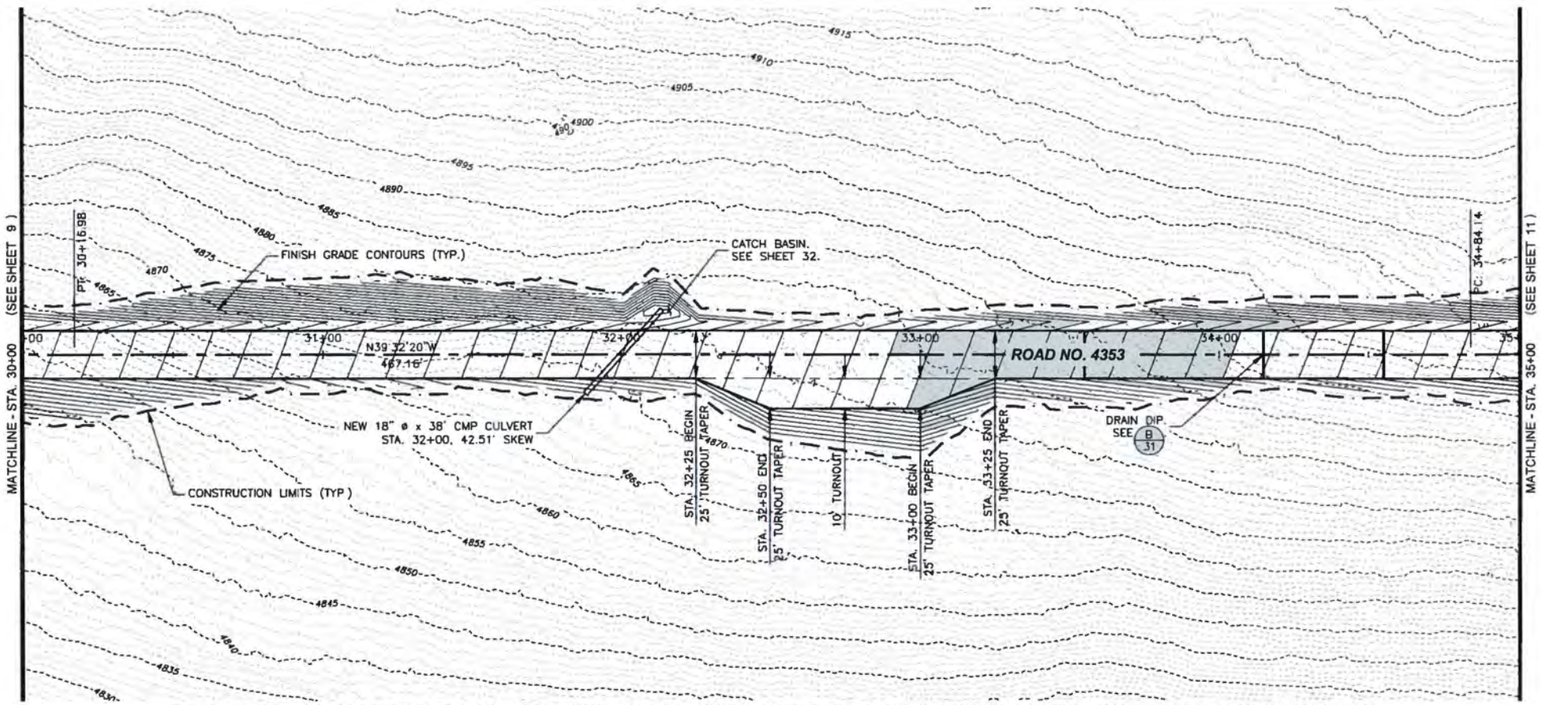
ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 9 OF 38

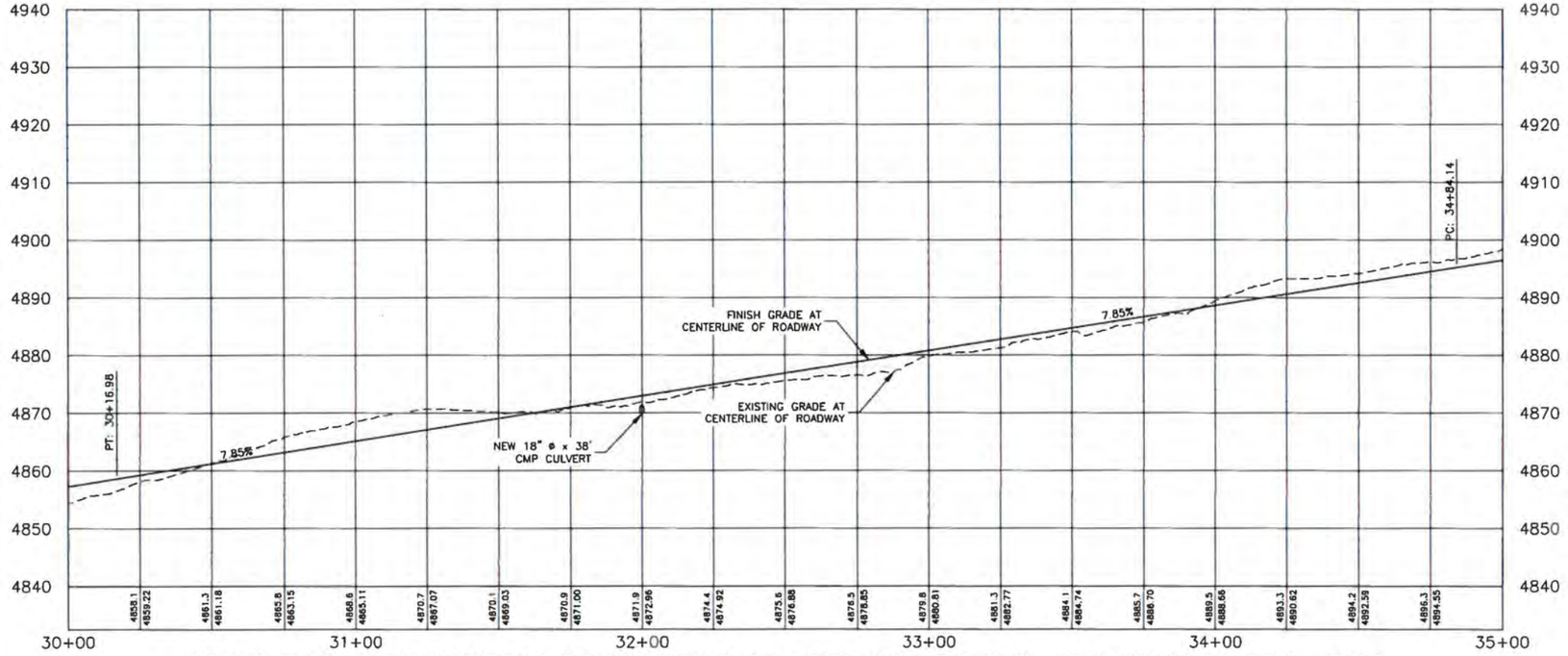
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-9-Road No. 4353 Plan & Profile.dwg

90% SUBMITTAL



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 30+00 TO STA. 35+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 30+00 TO STA. 35+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE US DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

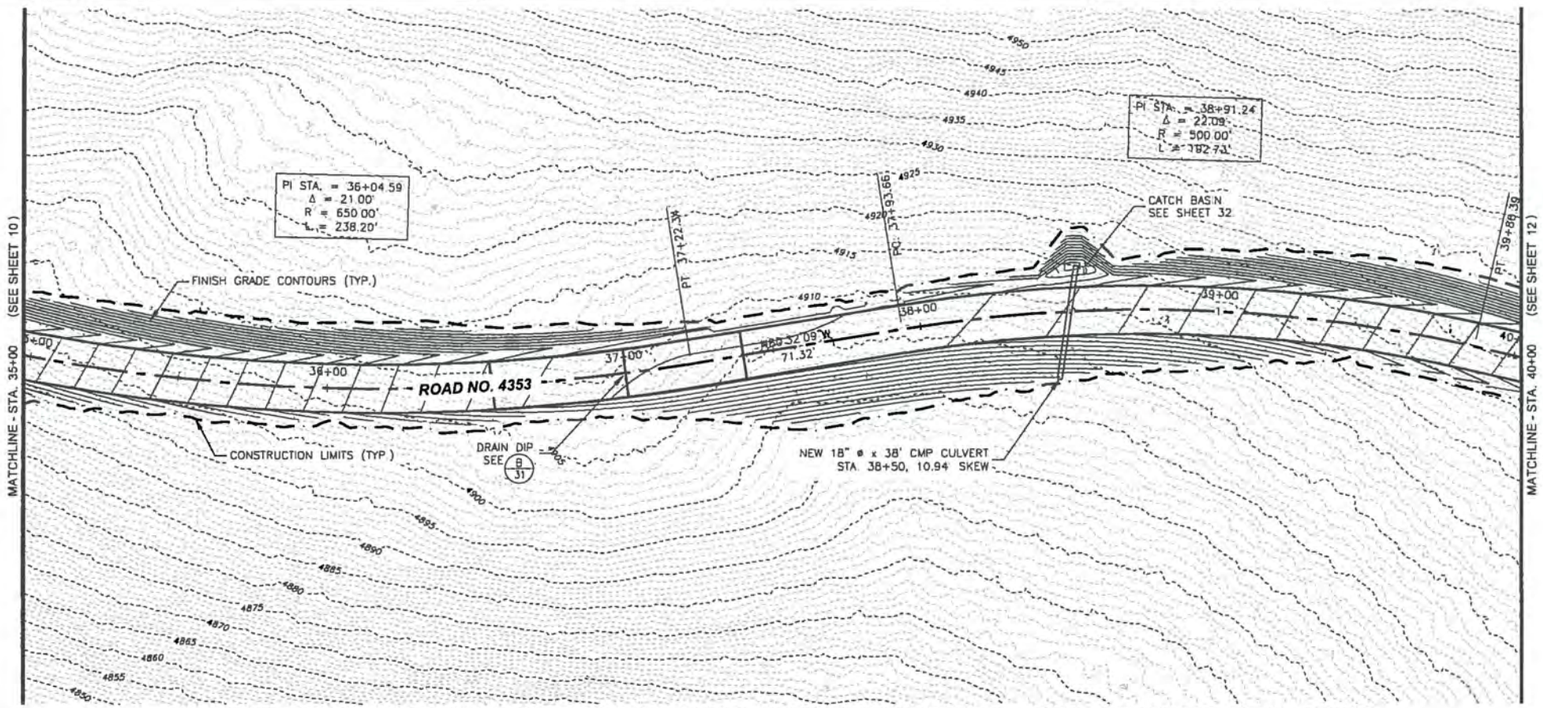
ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO.
10 OF 38

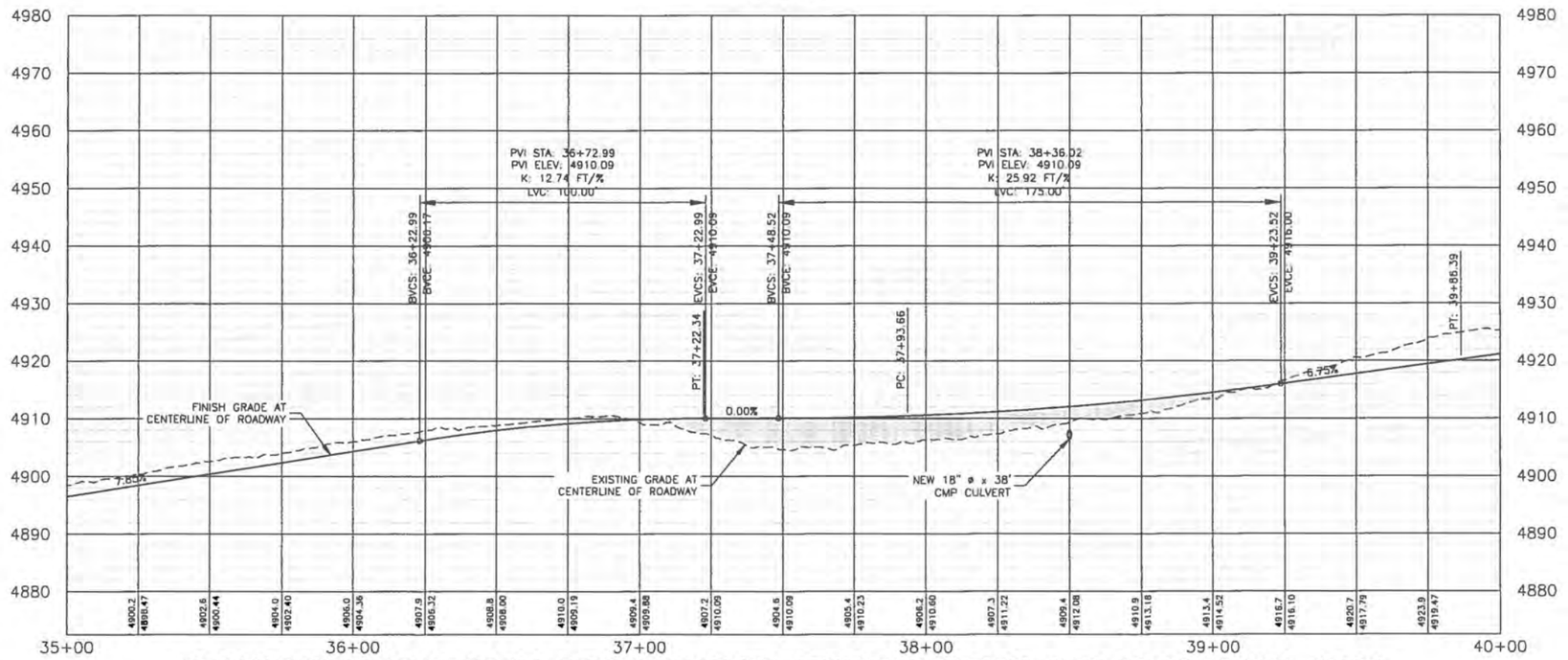
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-10-Road No. 4353 Plan & Profile.dwg

90% SUBMITTAL



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 35+00 TO STA. 40+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 35+00 TO STA. 40+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

PREPARED BY:

GreatWest engineering ©
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

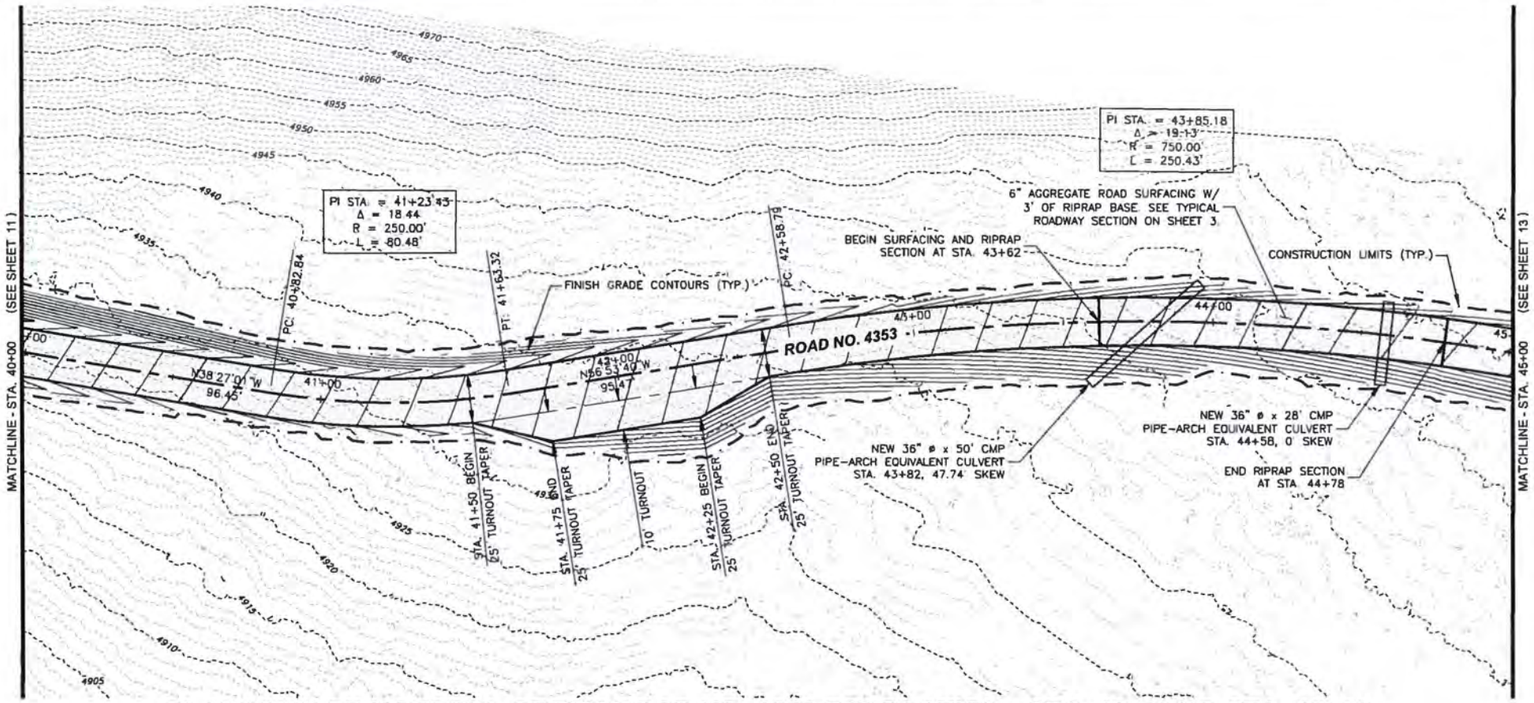
ROAD NO. 4353
LOLO NATIONAL FOREST

ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

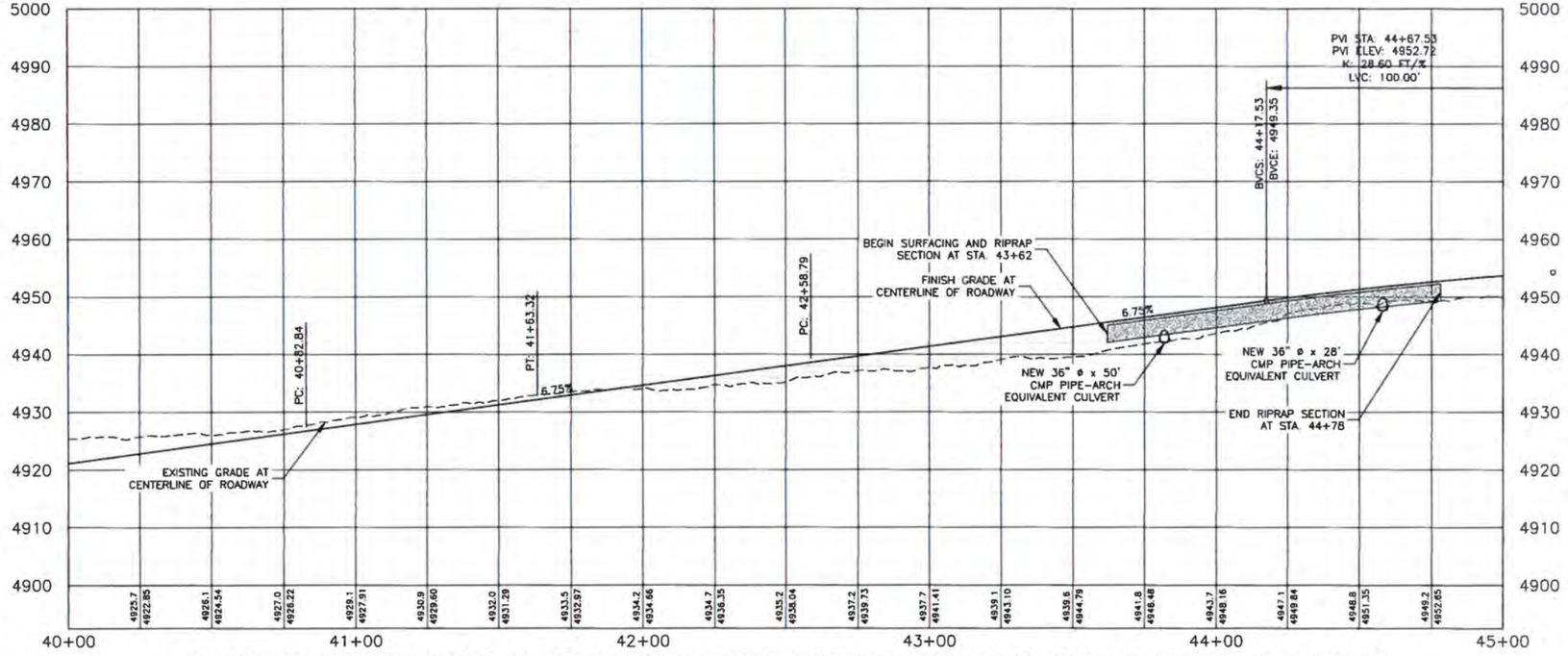
SHEET NO. 11 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-11-Road No. 4353 Plan & Profile.dwg



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 40+00 TO STA. 45+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 40+00 TO STA. 45+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

NOTES:

1. CONTRACTOR SHALL PLACE 2' OF AGGREGATE SURFACE COURSE UNDER THE 36"ø CMP PIPE-ARCH EQUIVALENT CULVERTS. MATERIAL SHALL EXTEND 1' BEYOND CULVERT WIDTH AND LENGTH. COMPACT AGGREGATE SURFACE COURSE FOLLOWING FSSS 204.11 METHOD 2. THIS WORK SHALL BE PAID UNDER APPLICABLE CULVERT BID ITEMS. REFERENCE ROADWAY CROSS-SECTIONS.

90% SUBMITTAL

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
REGION ONE

MORRELL CREEK ROAD RELOCATION

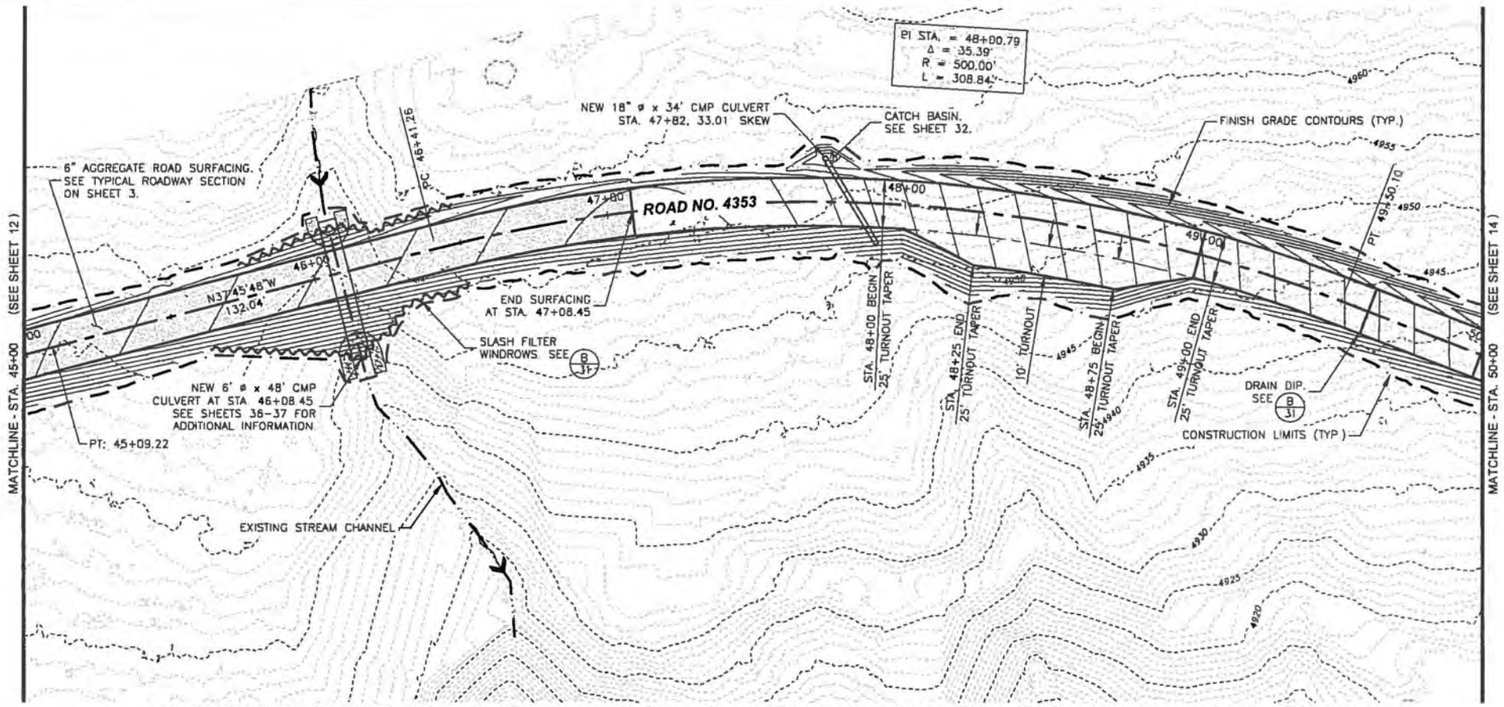
ROAD NO. 4353
LOLO NATIONAL FOREST

ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

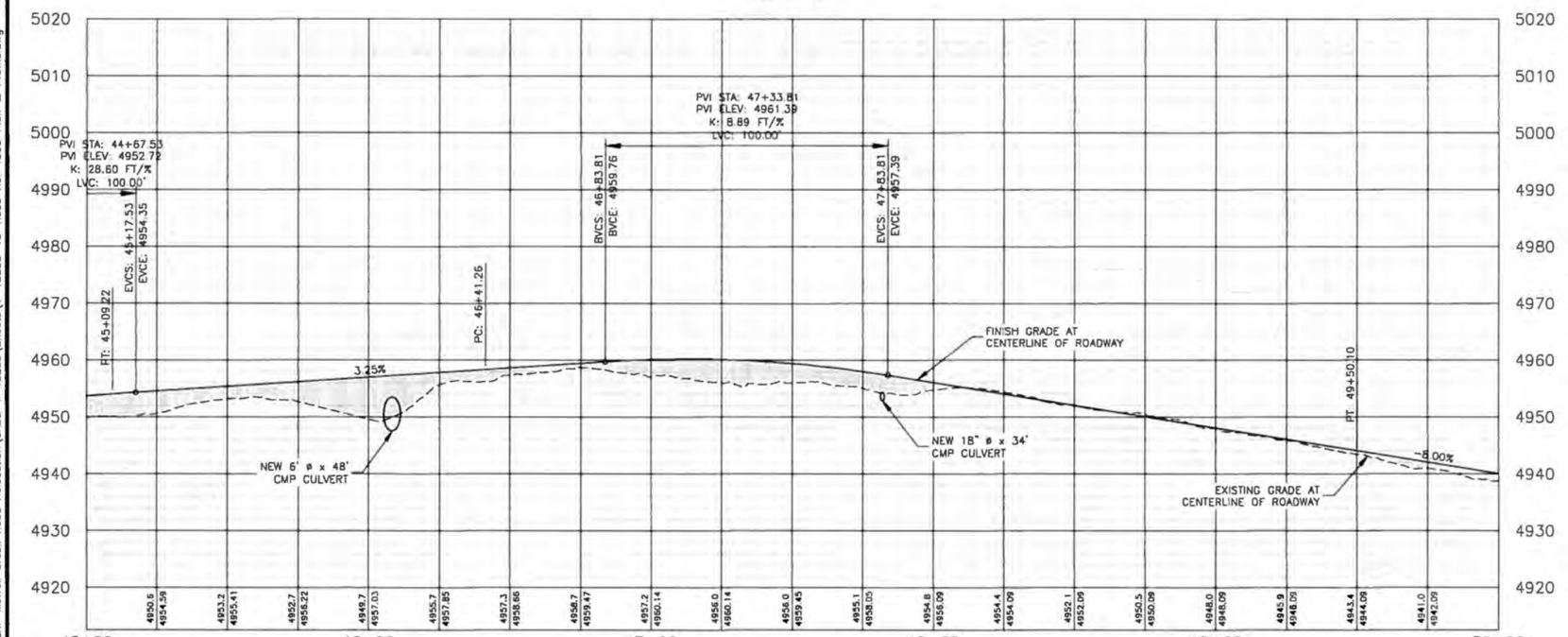
SHEET NO. 12 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-12-Road No 4353 Plan & Profile.dwg



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 45+00 TO STA. 50+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 45+00 TO STA. 50+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

90% SUBMITTAL

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

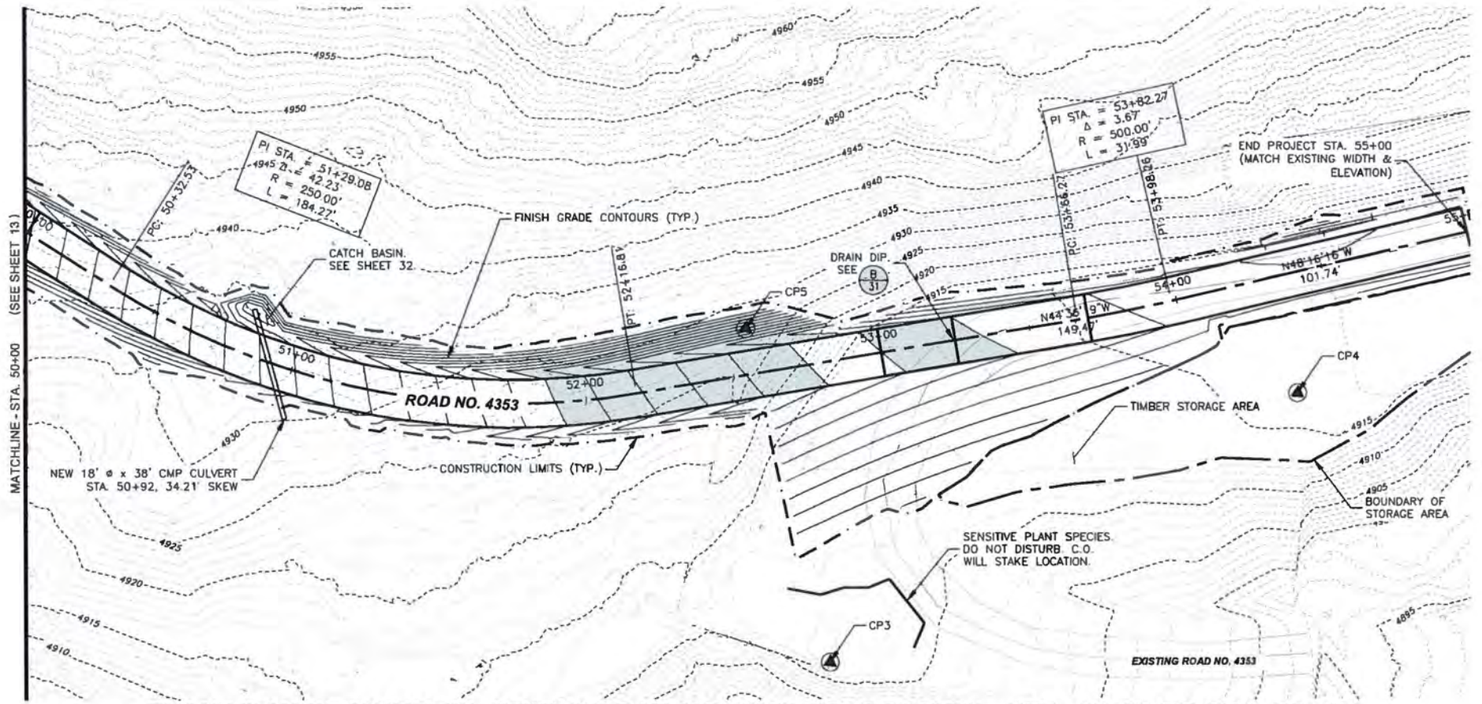
ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 13 OF 38

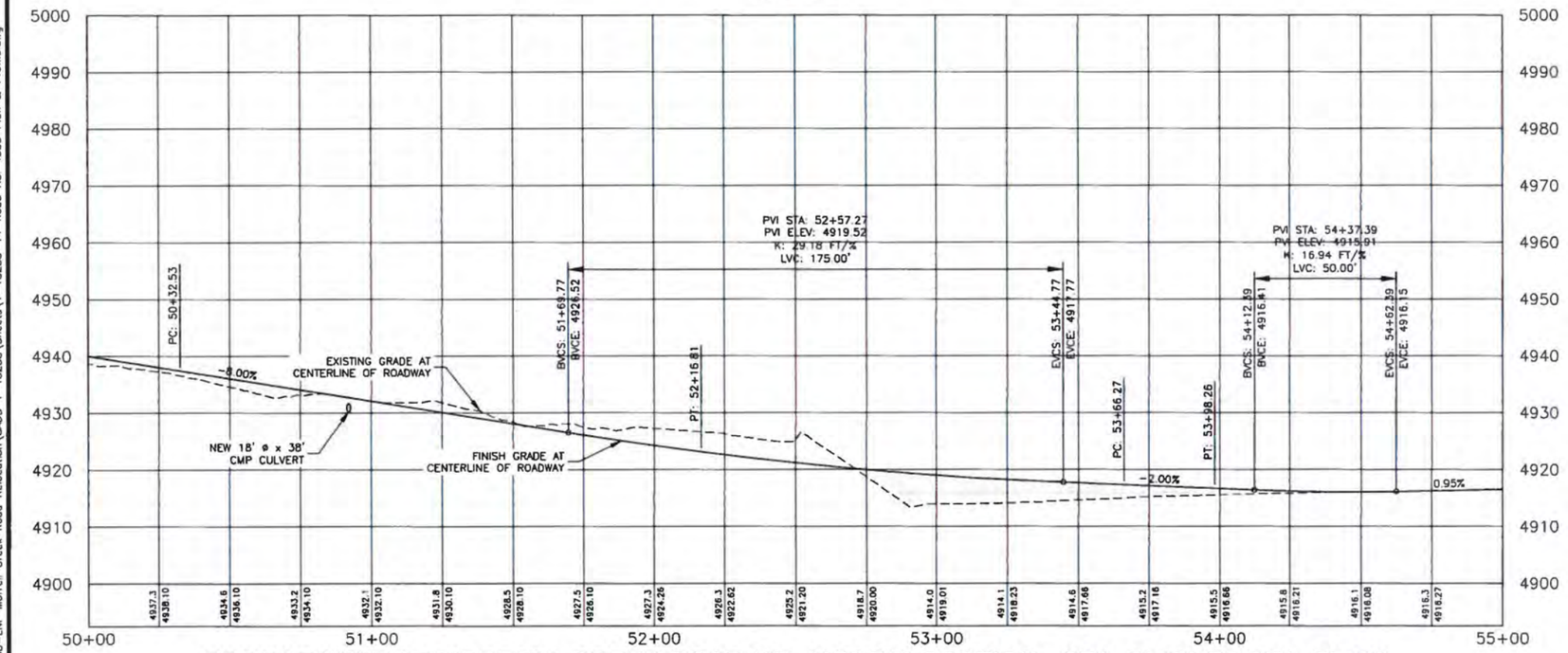
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-13-Road No. 4353 Plan & Profile.dwg

90% SUBMITTAL



PLAN VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 50+00 TO STA. 55+00

0 25 50
SCALE IN FEET



PROFILE VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION - STA. 50+00 TO STA. 55+00

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 25'

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

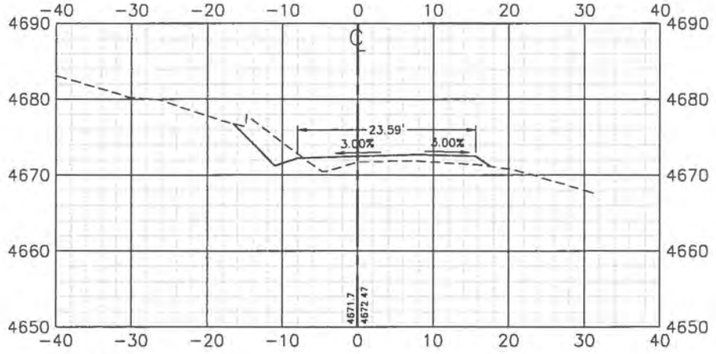
ROAD NO. 4353 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME				
DRAWN: BLP	DRAWING CHECKED: JJT				

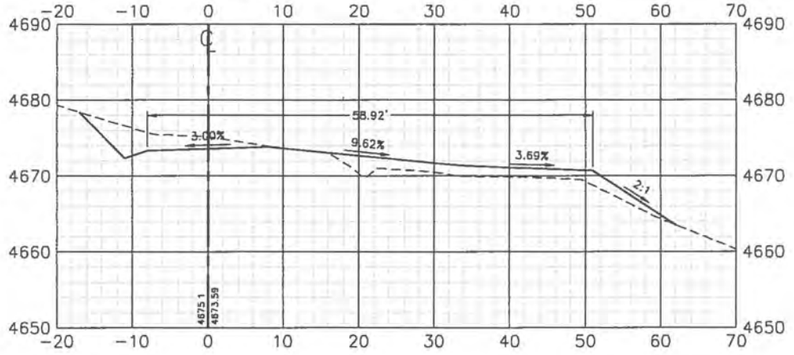
SHEET NO. 14 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-14-Road No. 4353 Plan & Profile.dwg

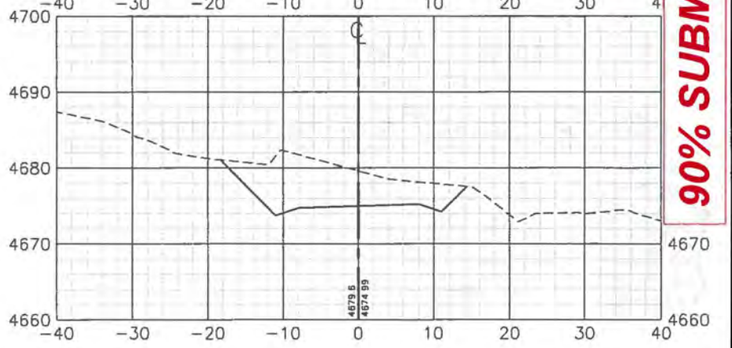
1+00.00



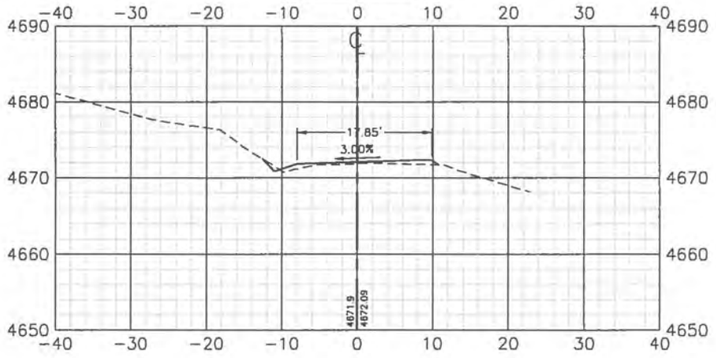
2+50.00



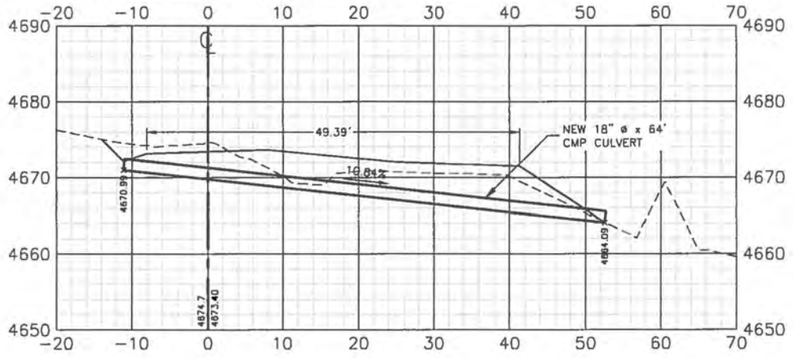
3+50.00



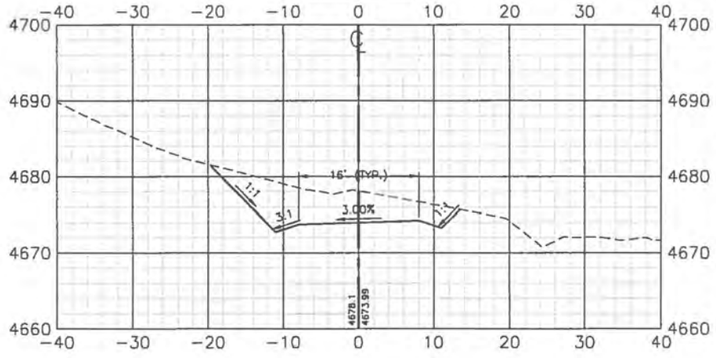
0+50.00



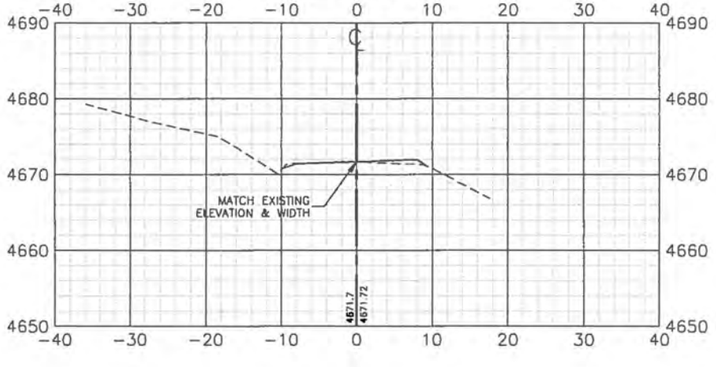
SKEWED 2+24.41 CL CULVERT



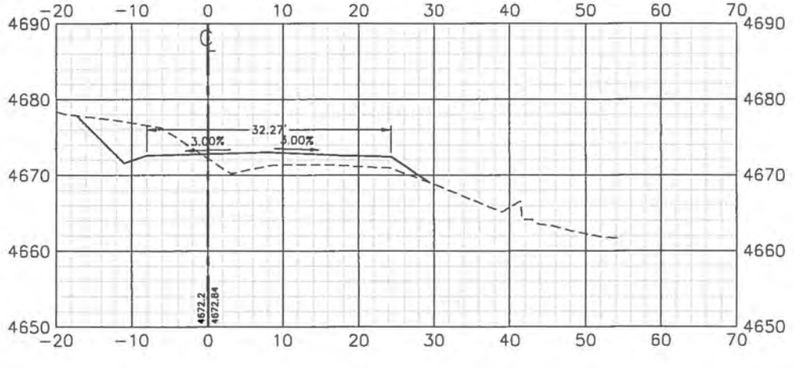
3+00.00



0+00.00



1+50.00



ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
US DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

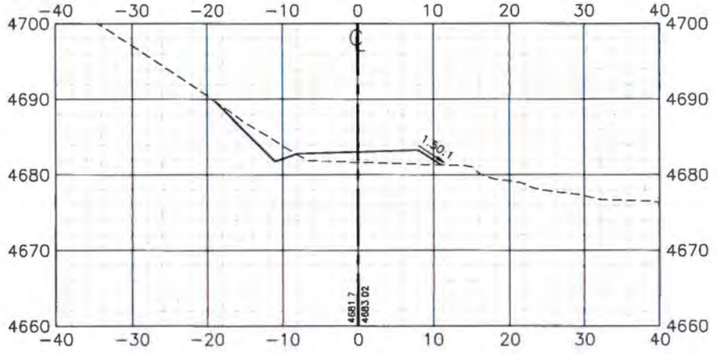
ROADWAY CROSS-SECTIONS

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

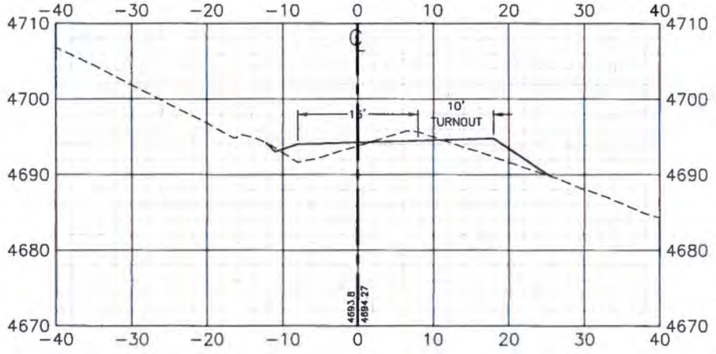
SHEET NO. 15 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-15-Road No. 4353 Roadway Cross-Sections.dwg

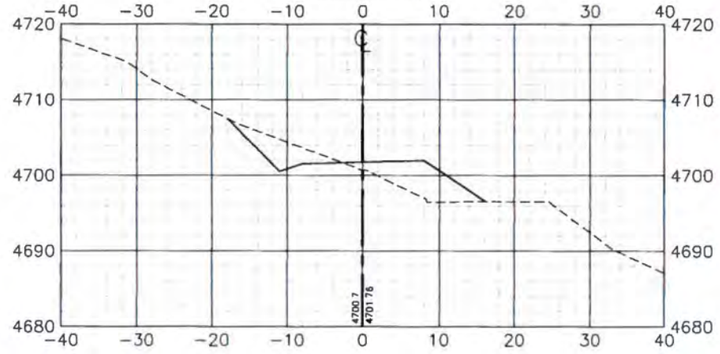
5+00.00



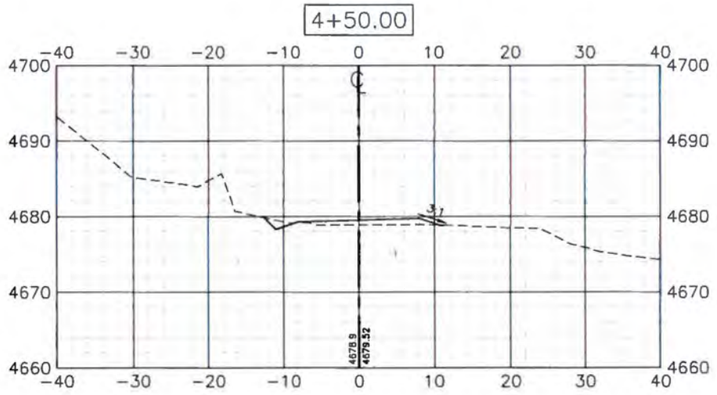
6+50.00



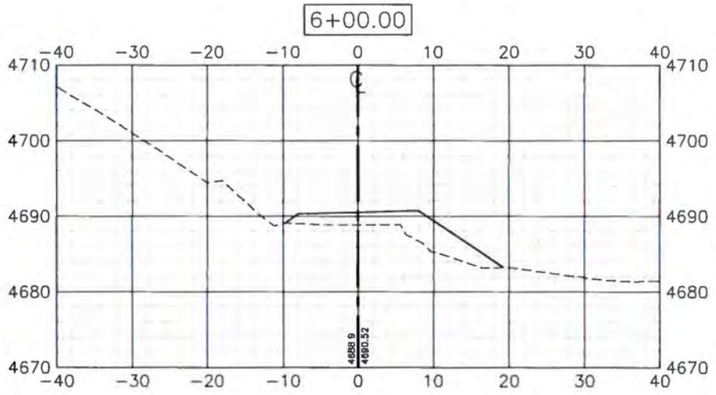
7+50.00



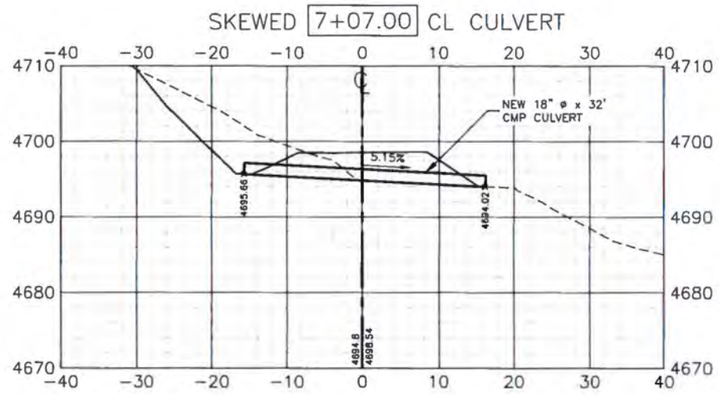
4+50.00



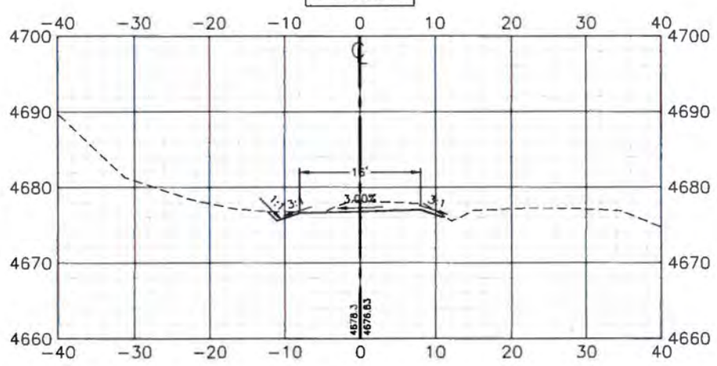
6+00.00



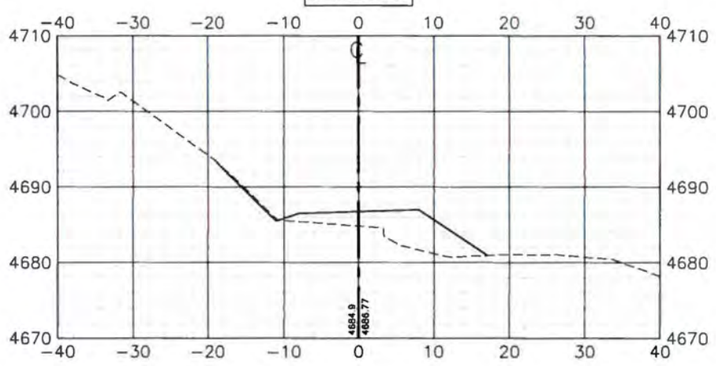
SKEWED 7+07.00 CL CULVERT



4+00.00



5+50.00



ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

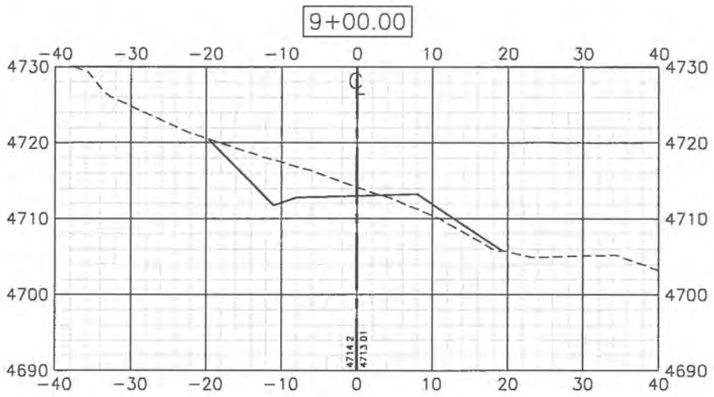
FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

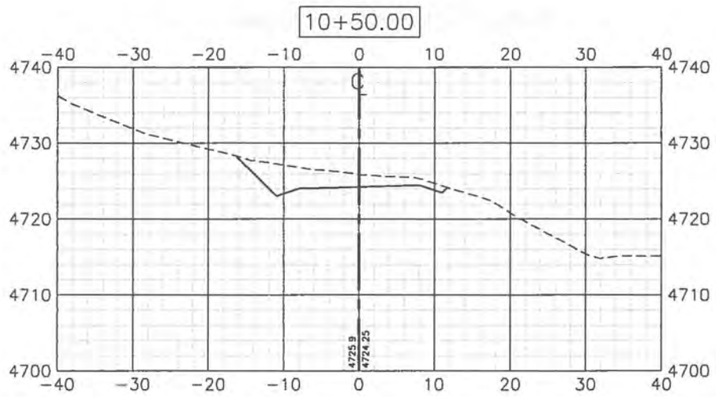
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

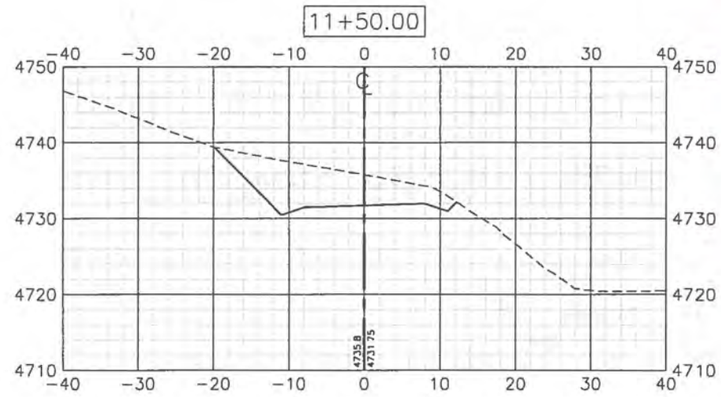
ROADWAY CROSS-SECTIONS

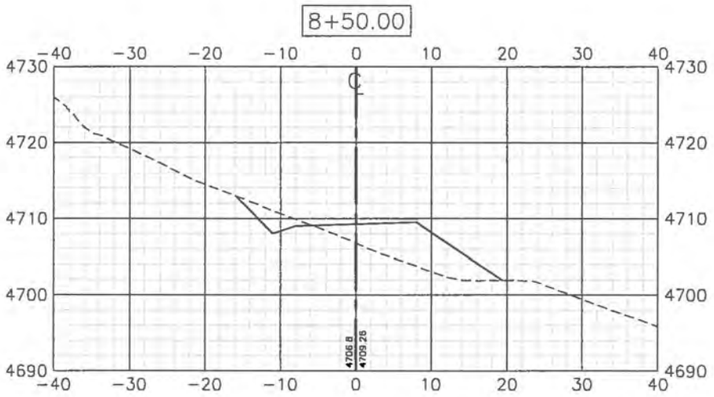
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	△				16 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	△				

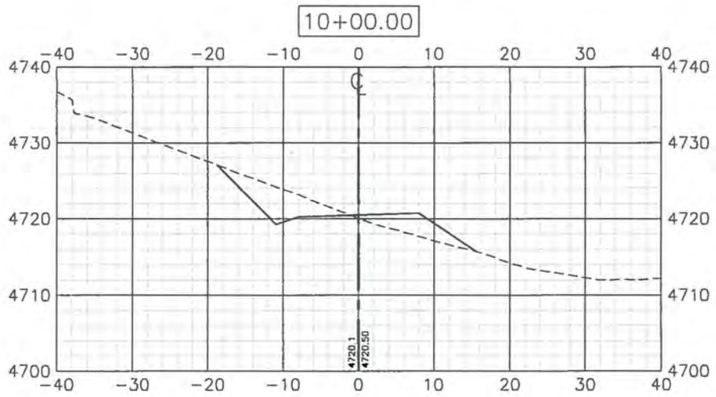
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-16-Road No. 4353 Roadway Cross-Sections.dwg

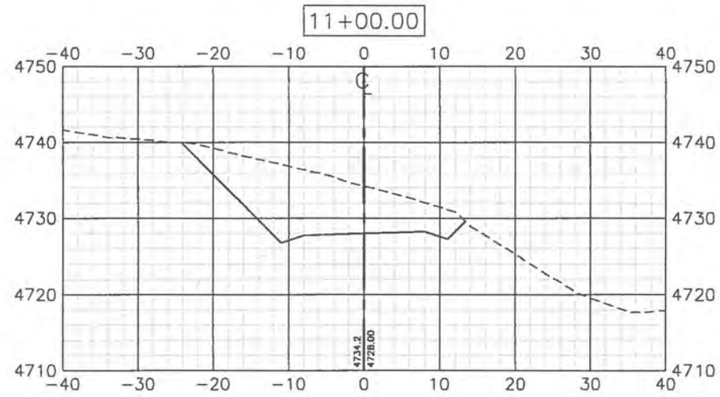


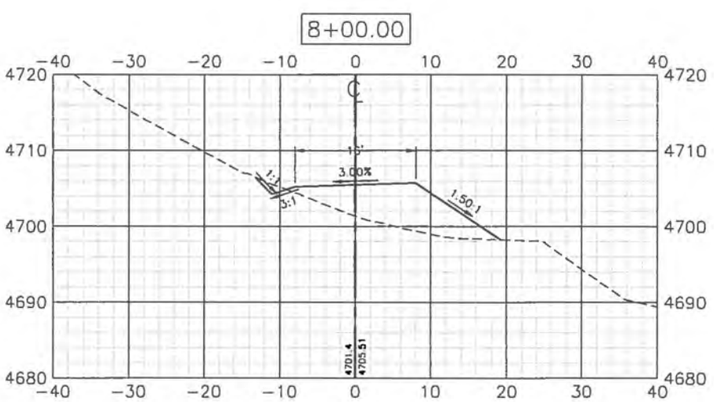


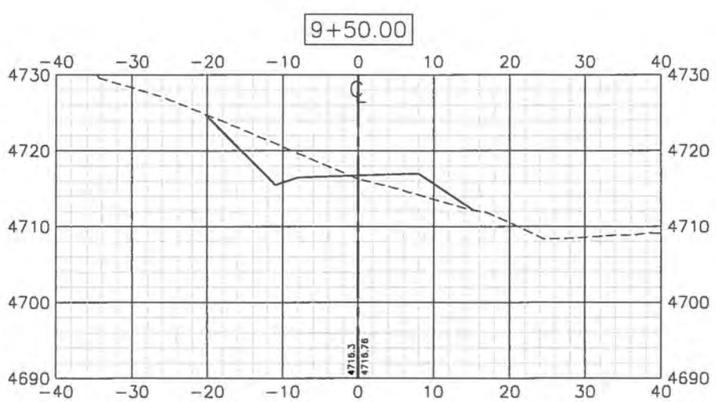












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

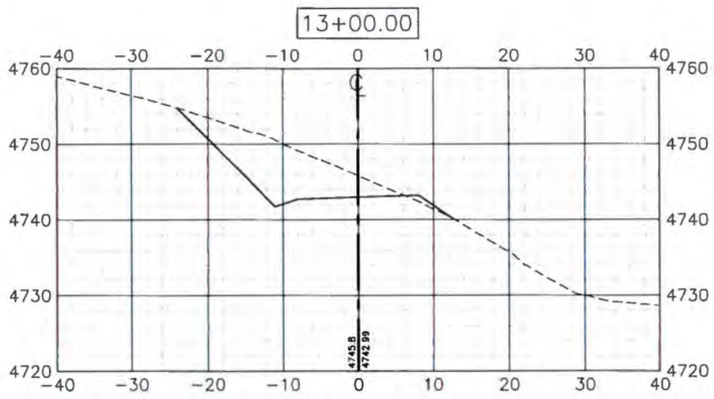
ROADWAY CROSS-SECTIONS

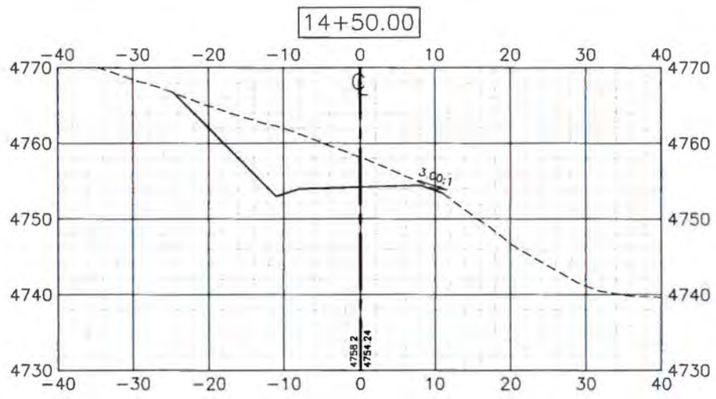
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

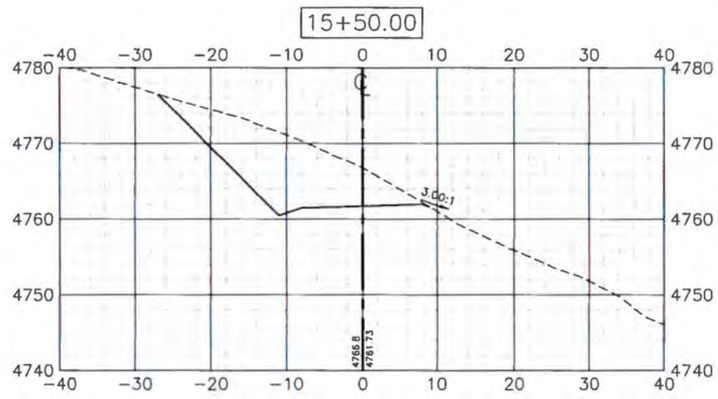
SHEET NO. 17 OF 38

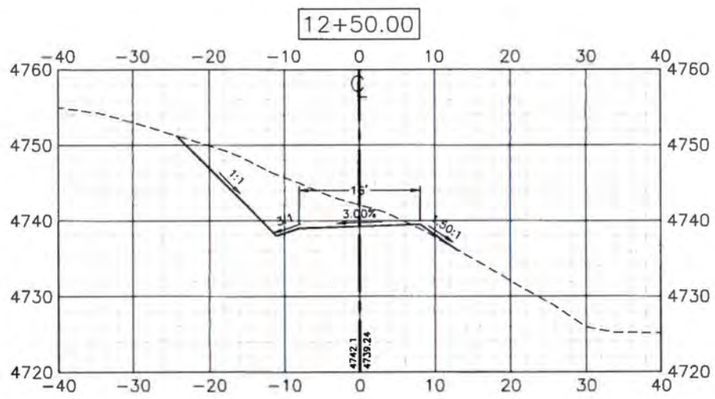
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-17-Road No. 4353 Roadway Cross-Sections.dwg

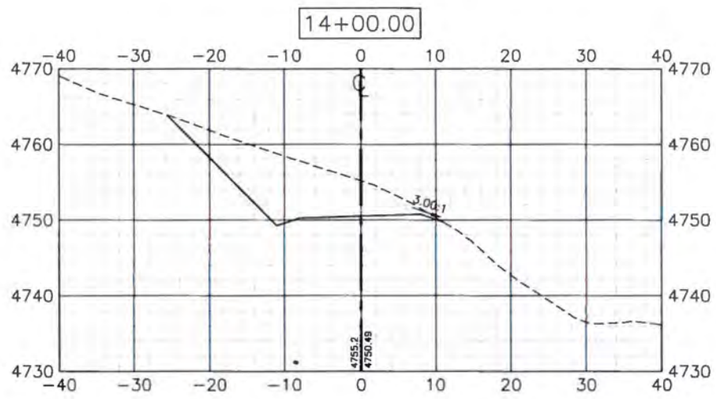
90% SUBMITTAL

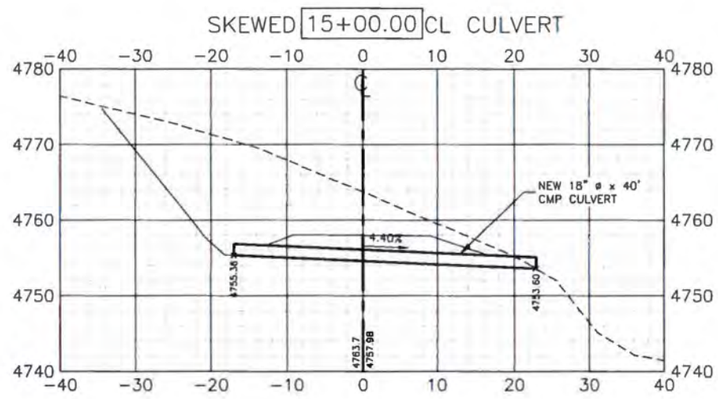


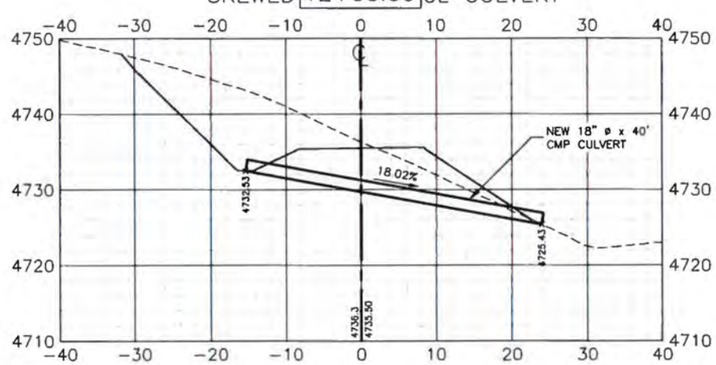


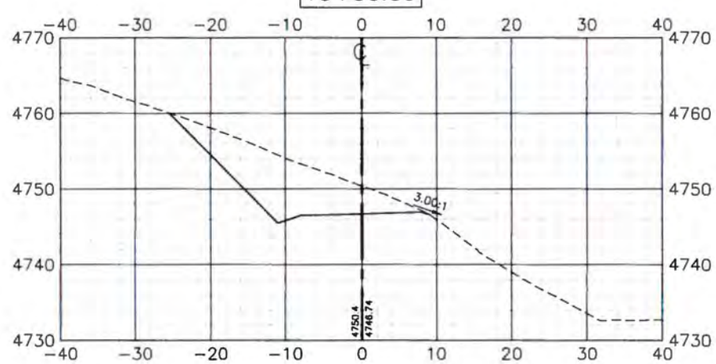












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

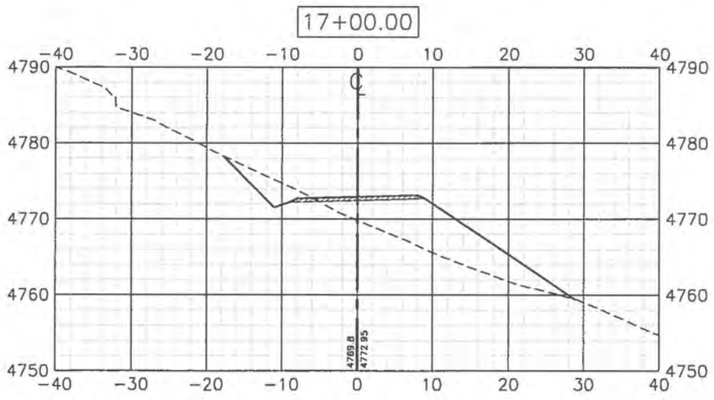
FOREST SERVICE
USDA DEPARTMENT OF AGRICULTURE
REGION ONE

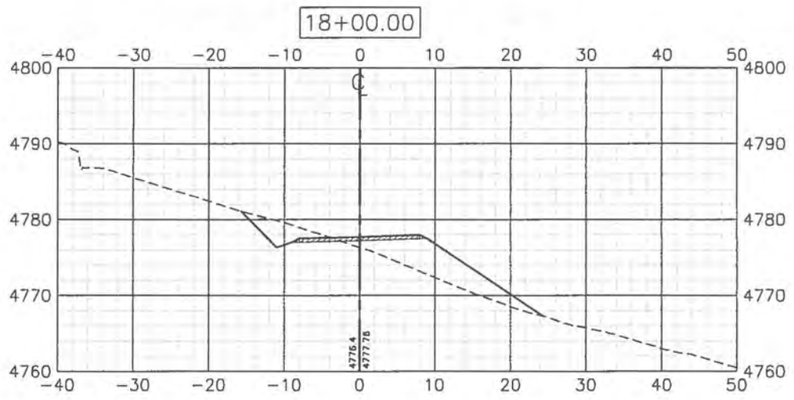
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

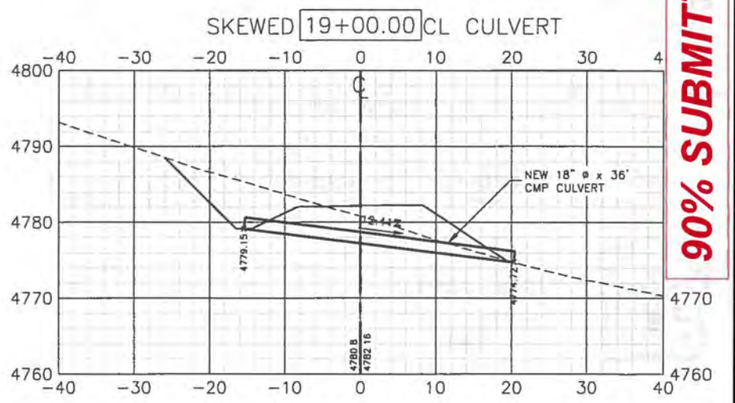
ROADWAY CROSS-SECTIONS

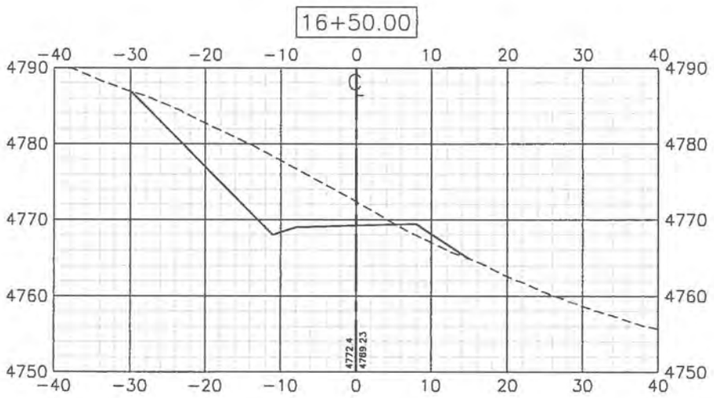
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	△				18 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	△				

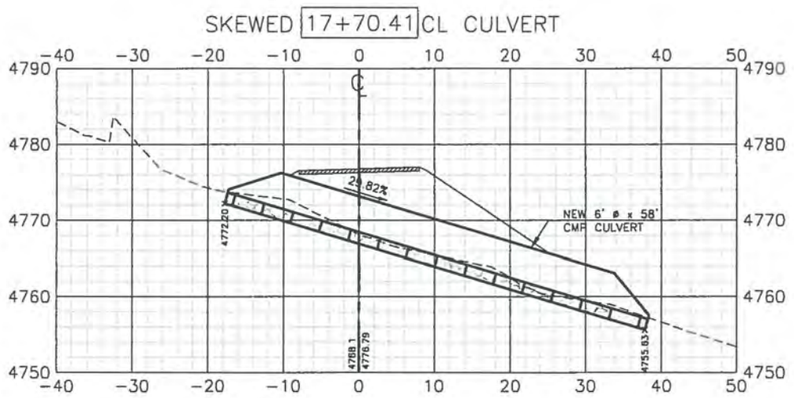
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-18-Road No. 4353 Roadway Cross-Sections.dwg

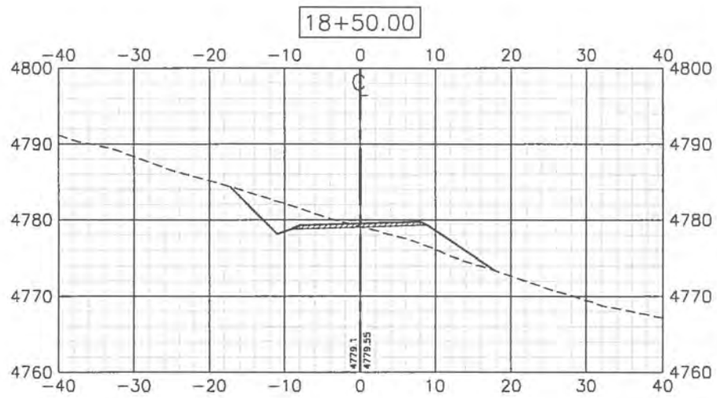


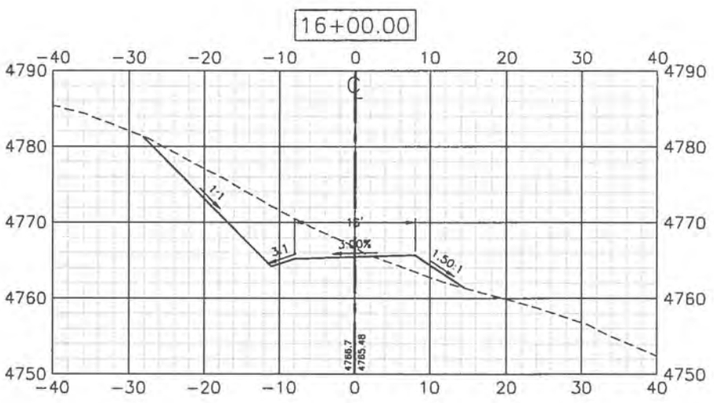


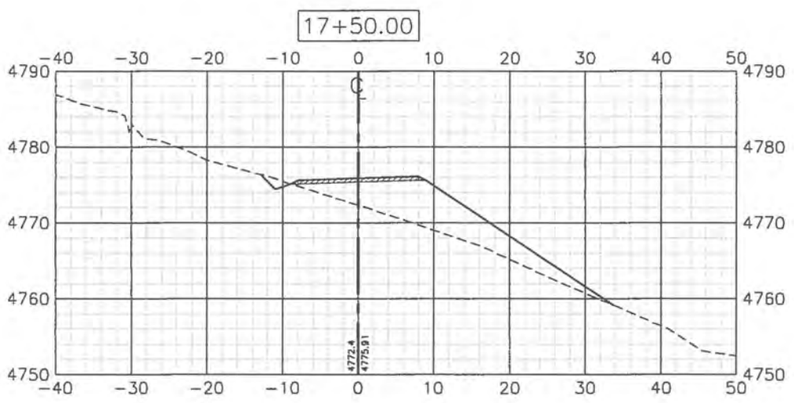












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

90% SUBMITTAL

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

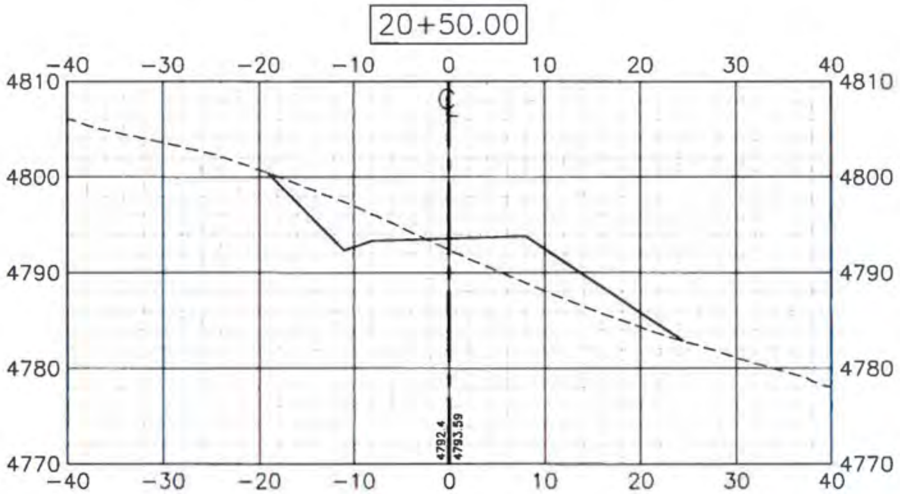
ROADWAY CROSS-SECTIONS

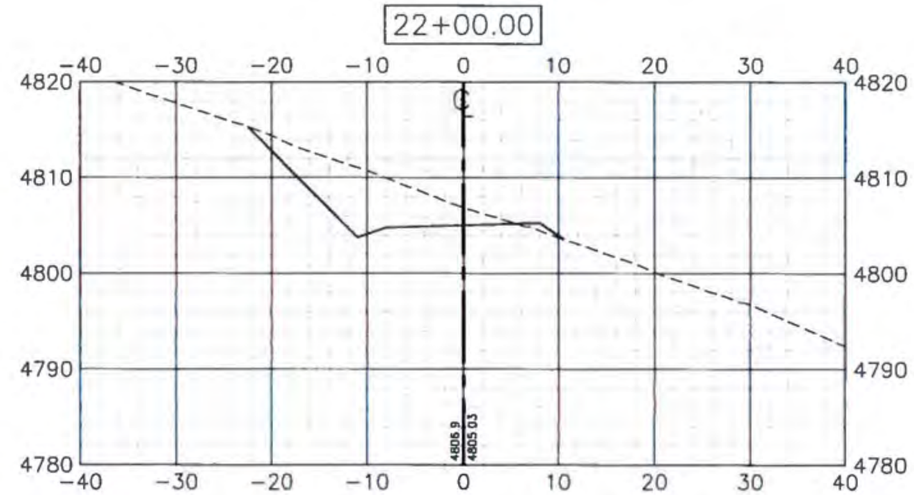
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	△				19 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	△				

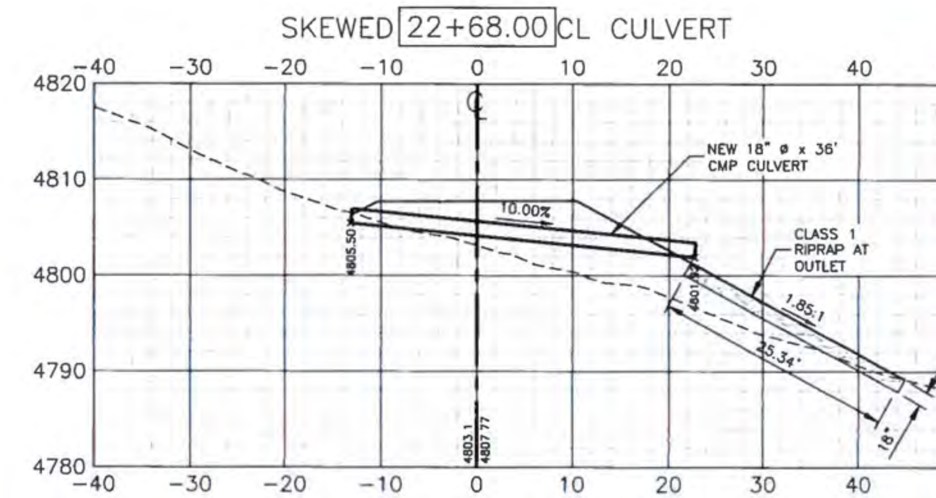
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-19-Road No. 4353 Roadway Cross-Sections.dwg

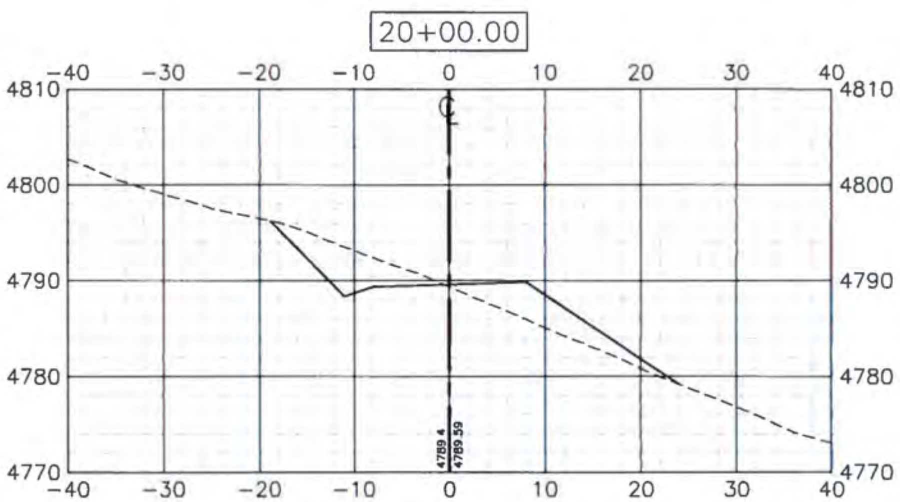
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-20-Road No. 4353 Roadway Cross-Sections.dwg

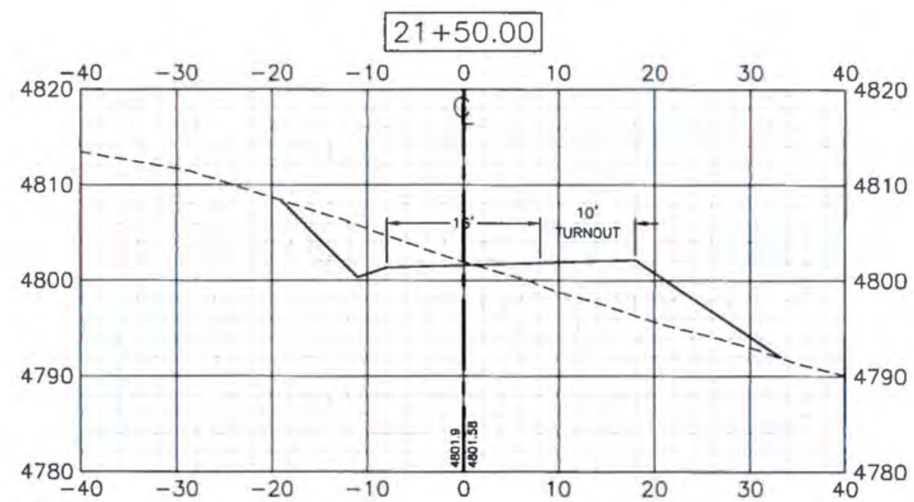
90% SUBMITTAL

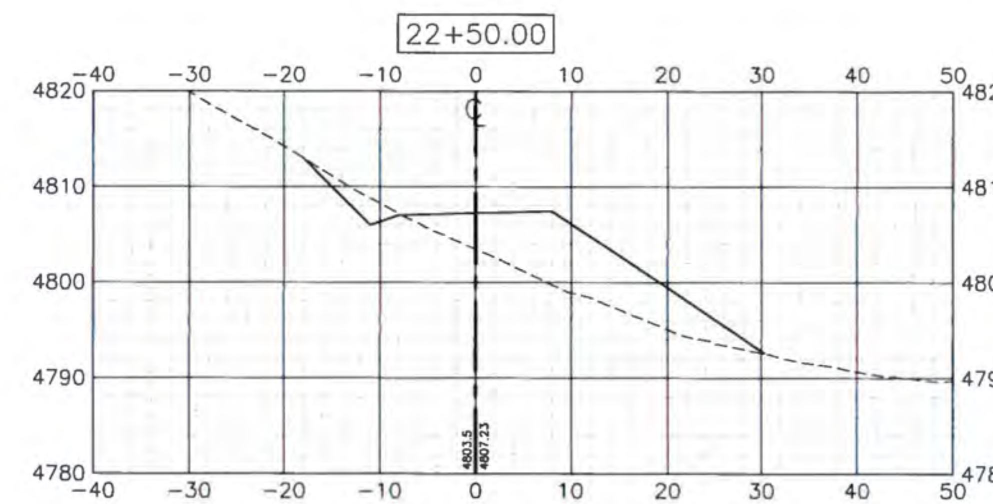


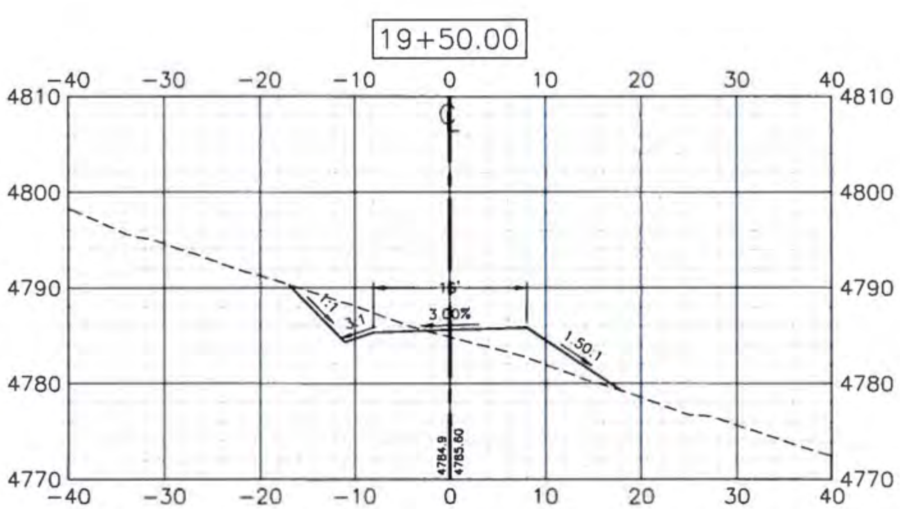


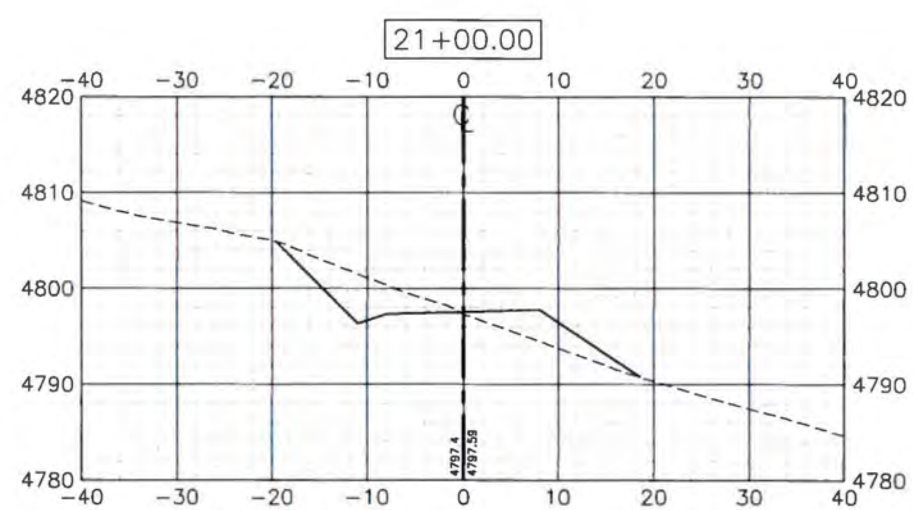












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

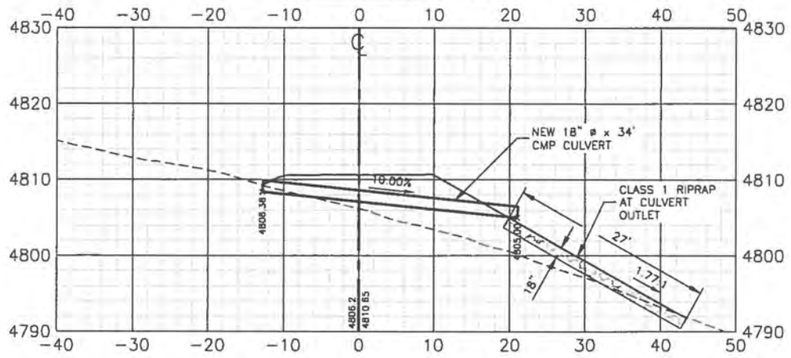
MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

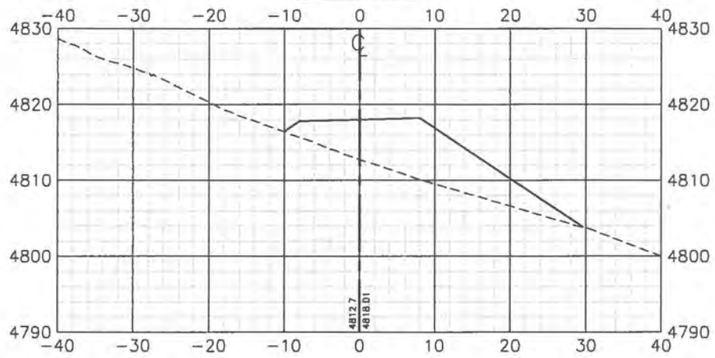
ROADWAY CROSS-SECTIONS

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO. 20 OF 38
DESIGNED: BLP	DESIGN CHECKED: RME	△				
DRAWN: BLP	DRAWING CHECKED: JJT	△				

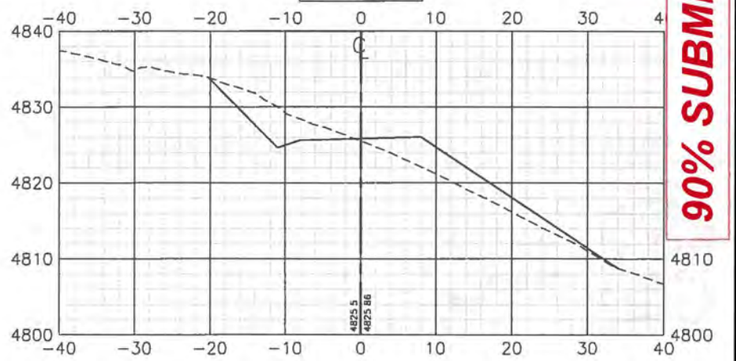
SKEWED 23+64.00 CL CULVERT



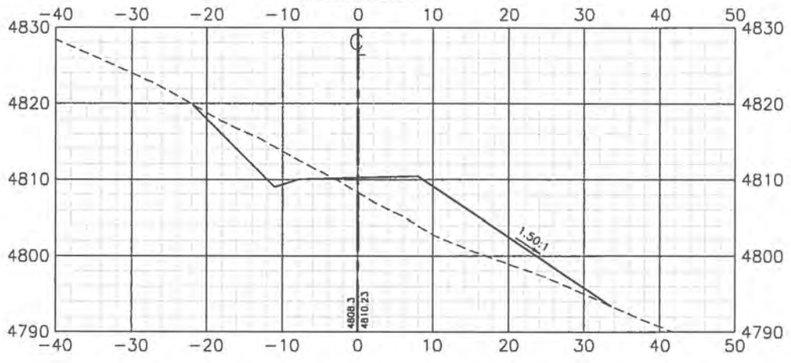
25+00.00



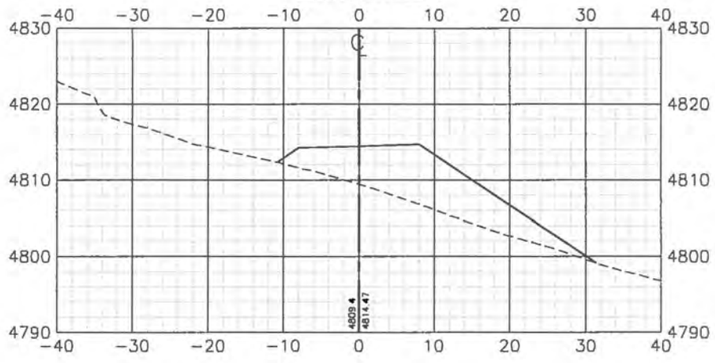
26+00.00



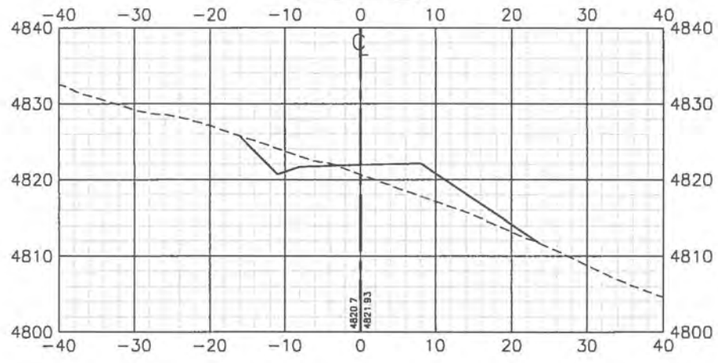
23+50.00



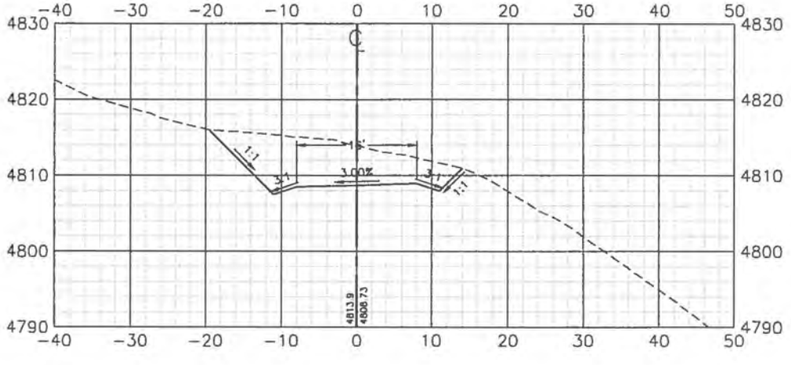
24+50.00



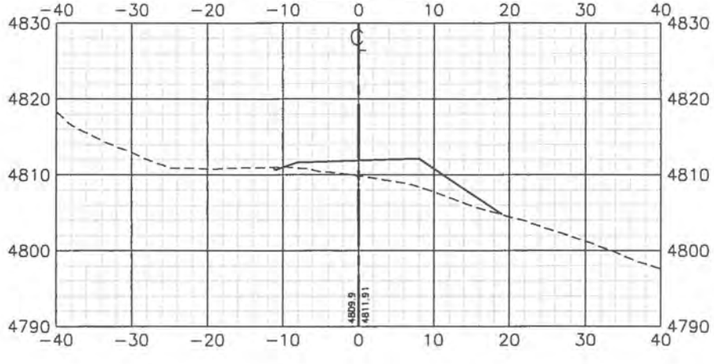
25+50.00



23+00.00



24+00.00



ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

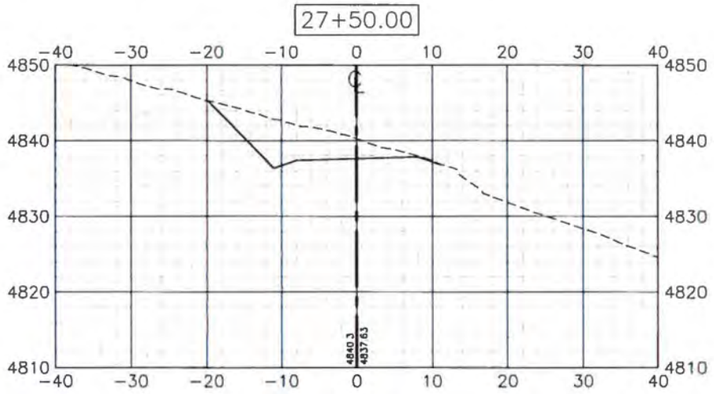
MORRELL CREEK ROAD RELOCATION

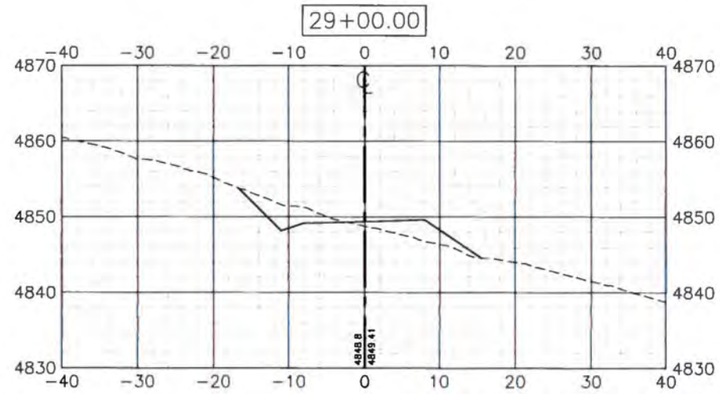
ROAD NO. 4353
LOLO NATIONAL FOREST

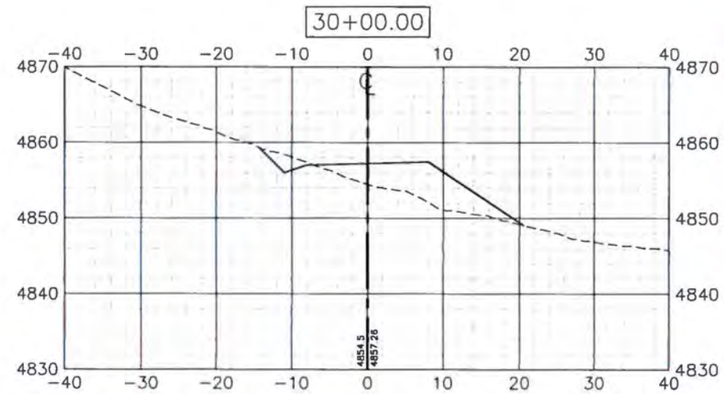
ROADWAY CROSS-SECTIONS

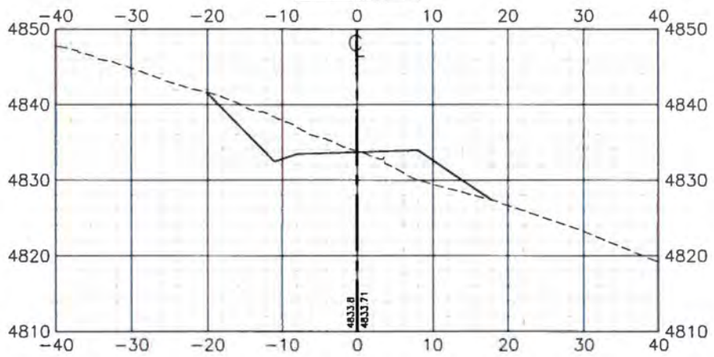
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	△				21 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	△				

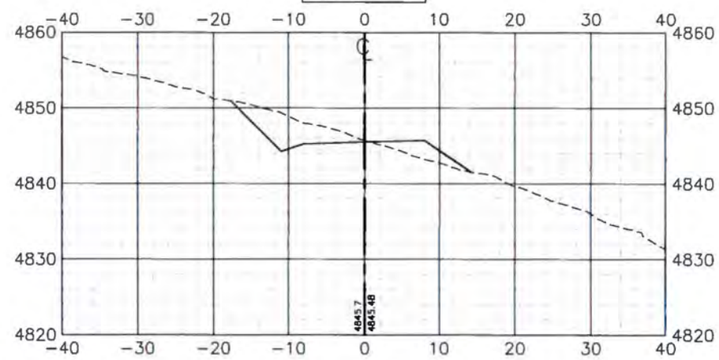
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-21-Road No. 4353 Roadway Cross-Sections.dwg

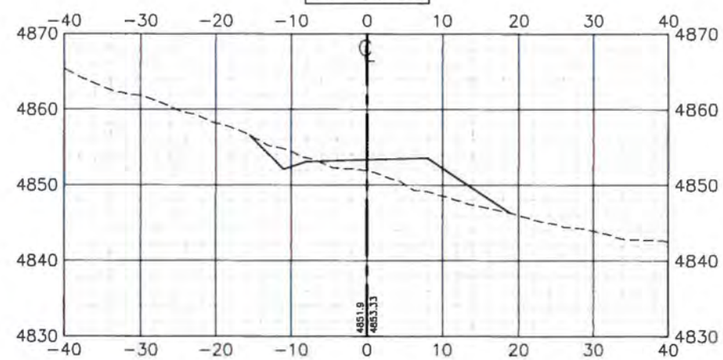


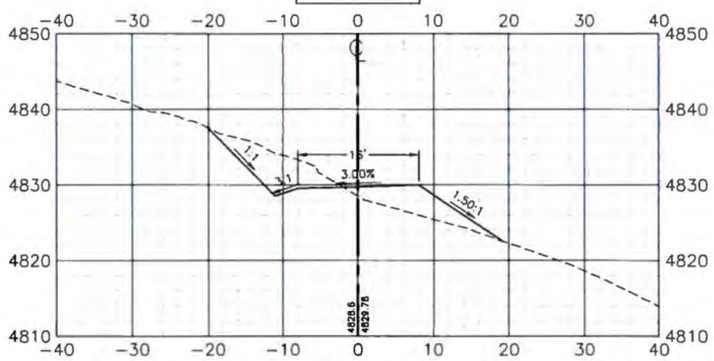


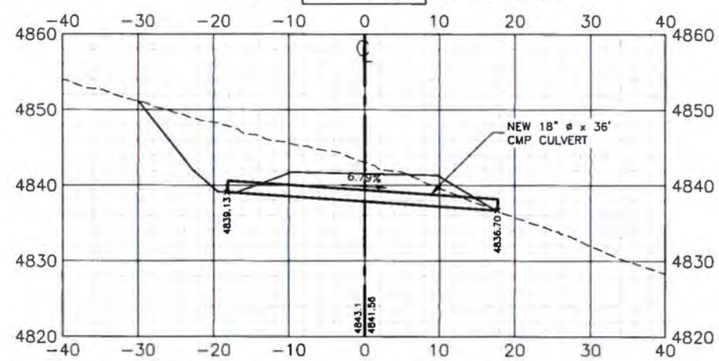












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

90% SUBMITTAL

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

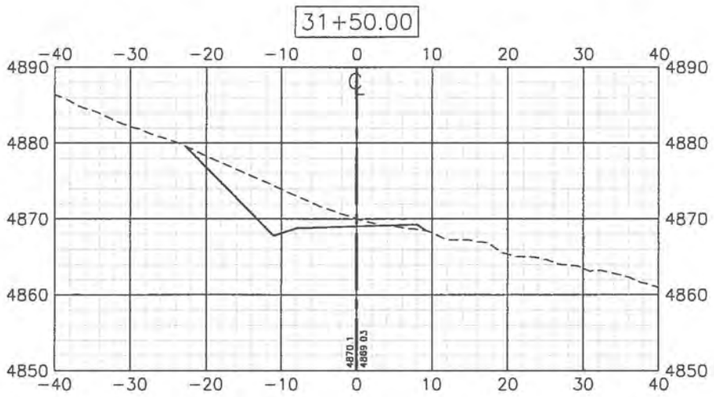
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

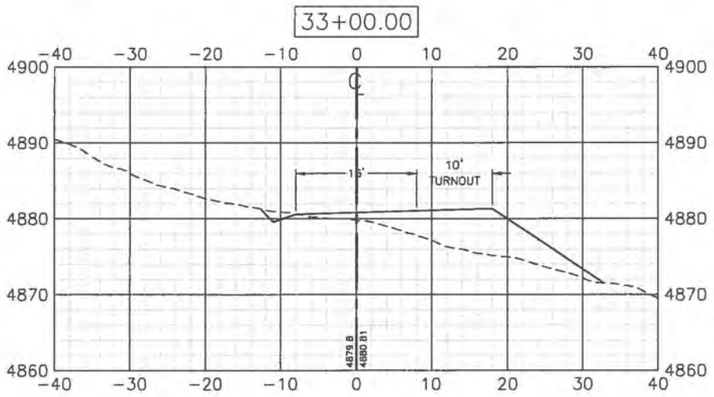
ROADWAY CROSS-SECTIONS

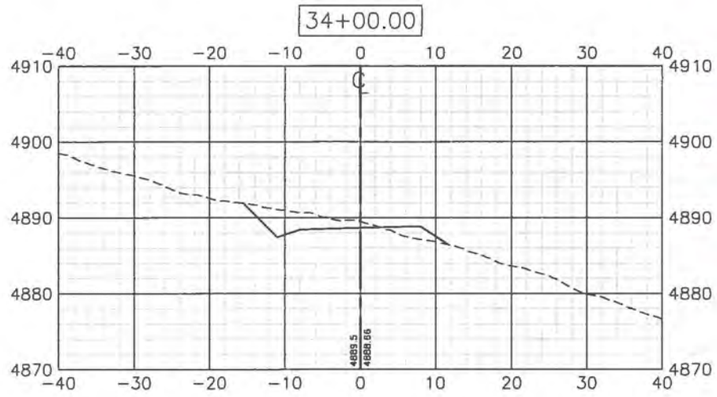
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	△				22 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	△				

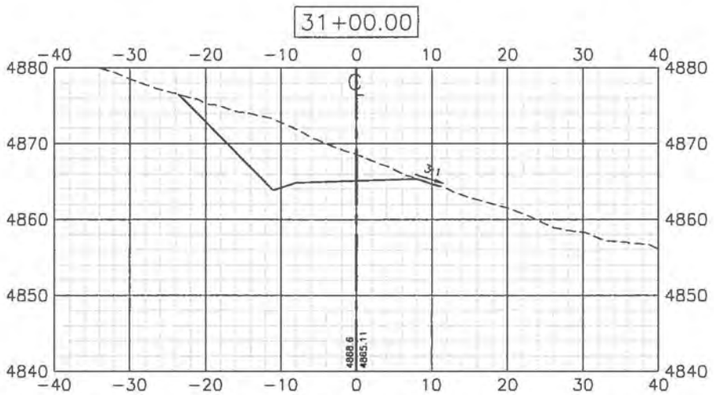
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-22-Road No. 4353 Roadway Cross-Sections.dwg

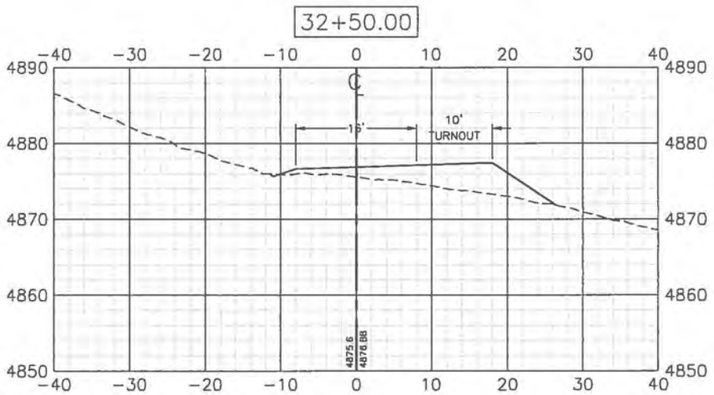
90% SUBMITTAL

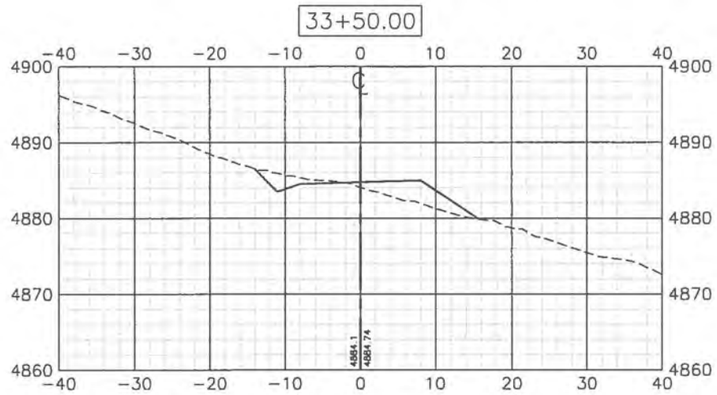


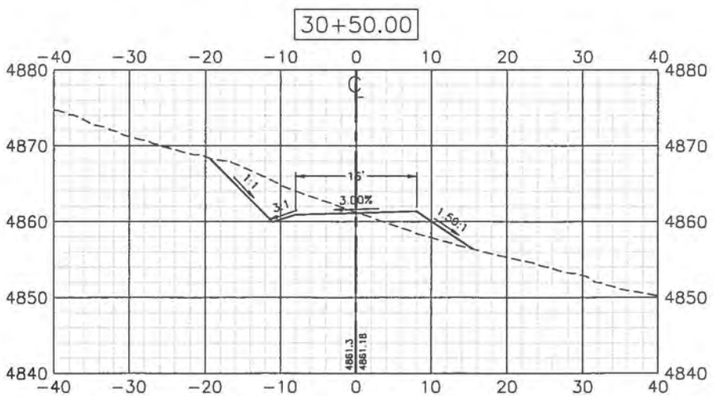


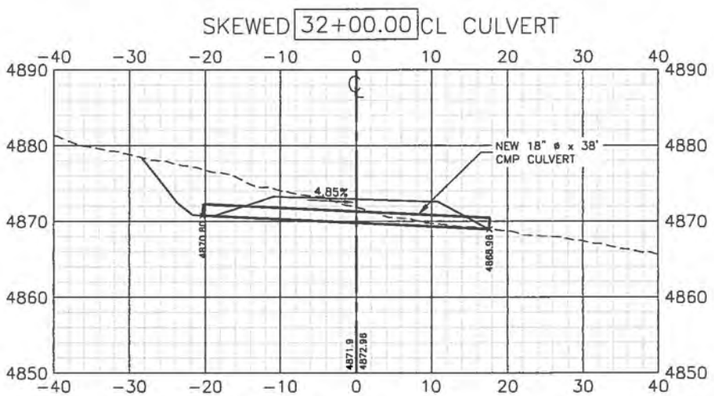












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

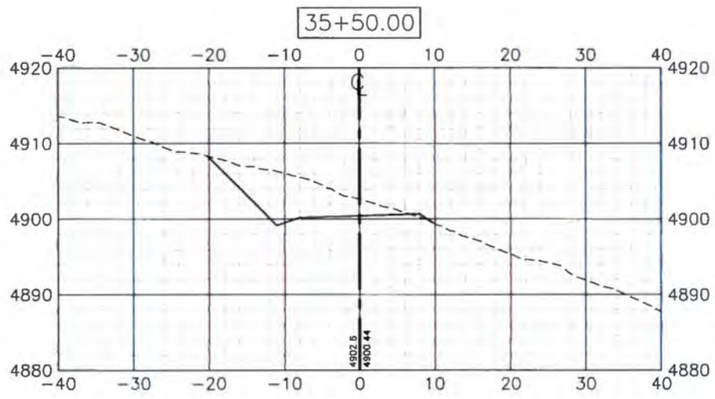
FOREST SERVICE
DEPARTMENT OF AGRICULTURE
REGION ONE

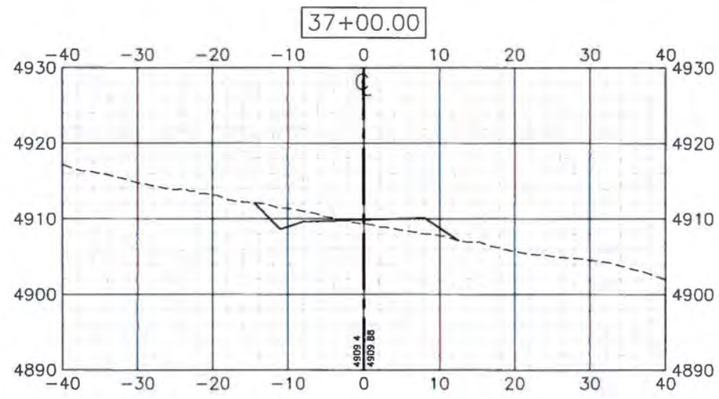
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

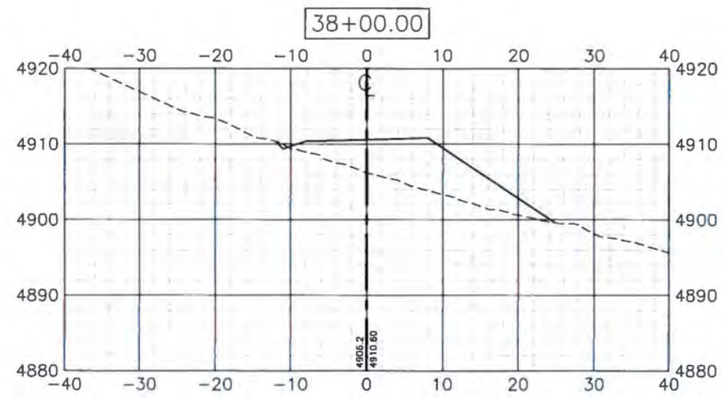
ROADWAY CROSS-SECTIONS

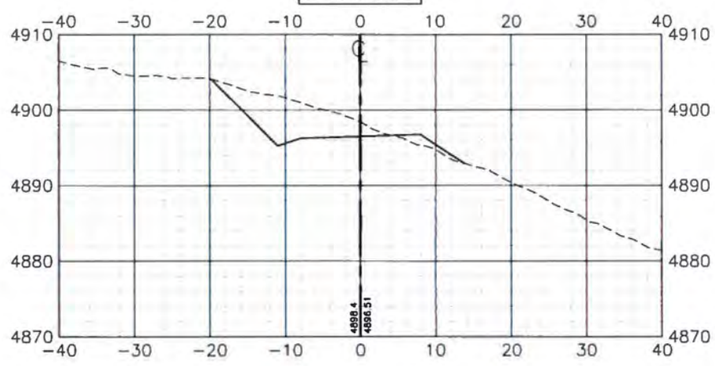
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	△				23 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	△				

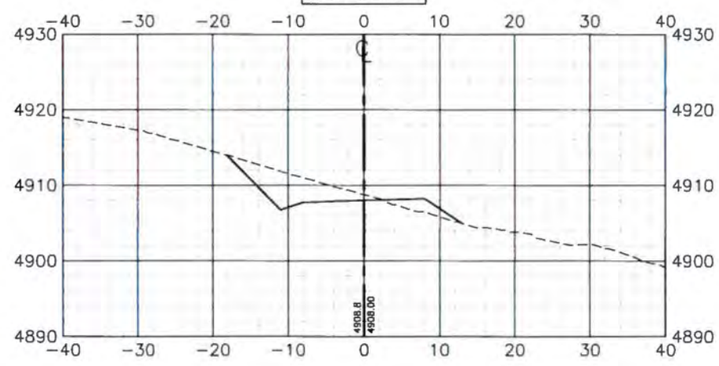
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-23-Road No. 4353 Roadway Cross-Sections.dwg

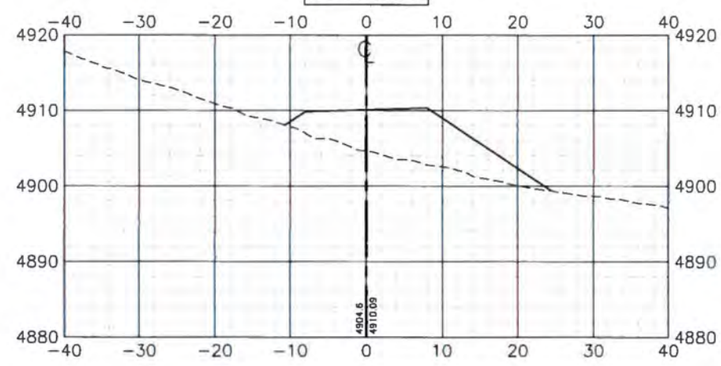


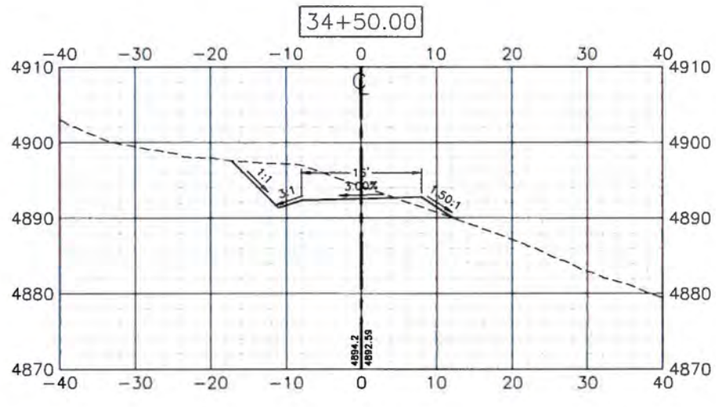


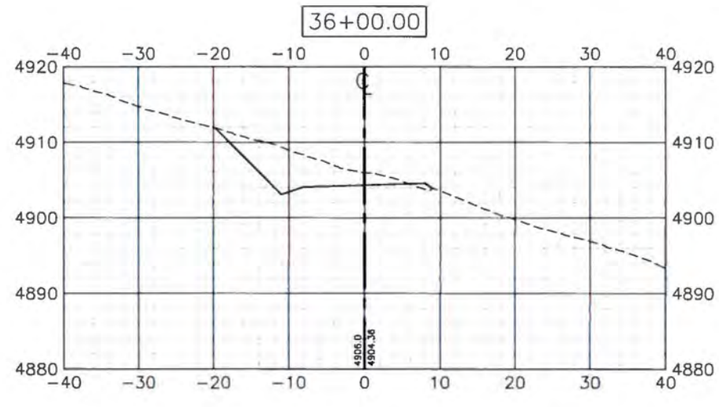












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

90% SUBMITTAL

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

ROADWAY CROSS-SECTIONS

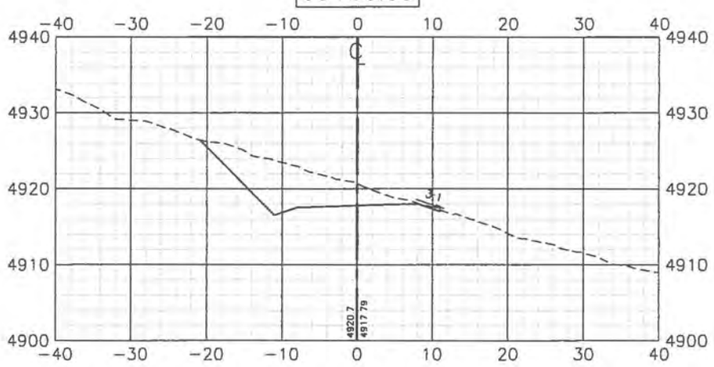
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 24 OF 38

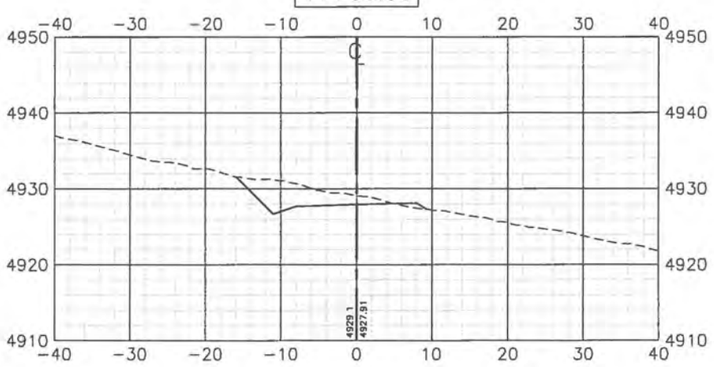
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-24-Road No. 4353 Roadway Cross-Sections.dwg

90% SUBMITTAL

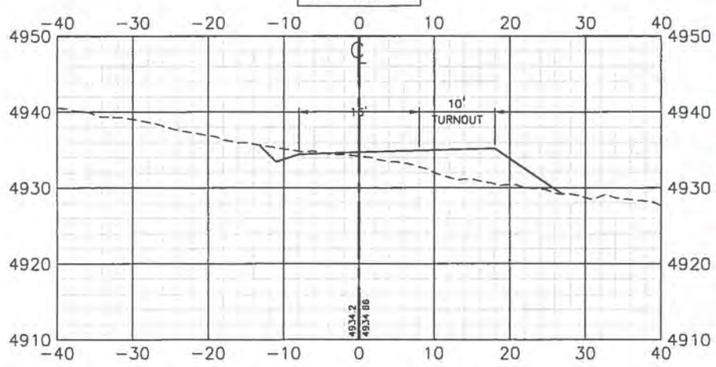
39+50.00



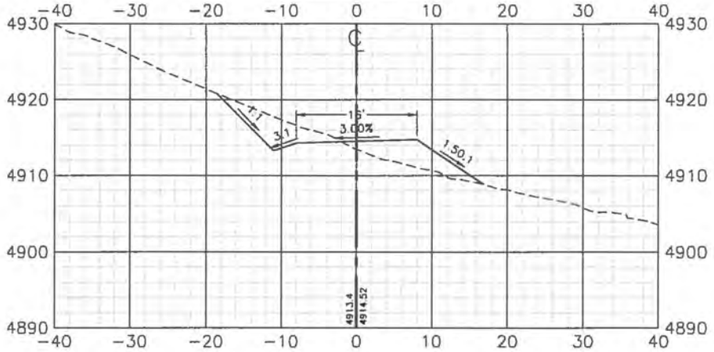
41+00.00



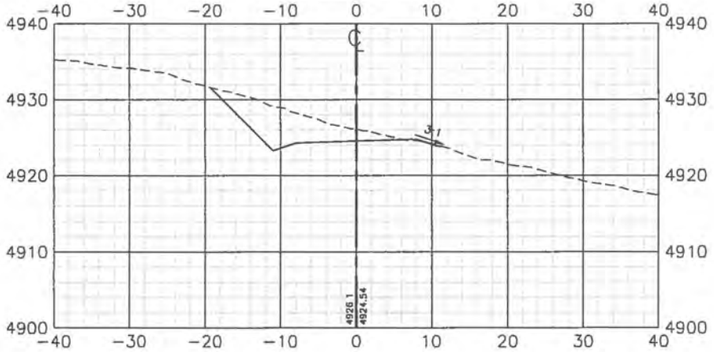
42+00.00



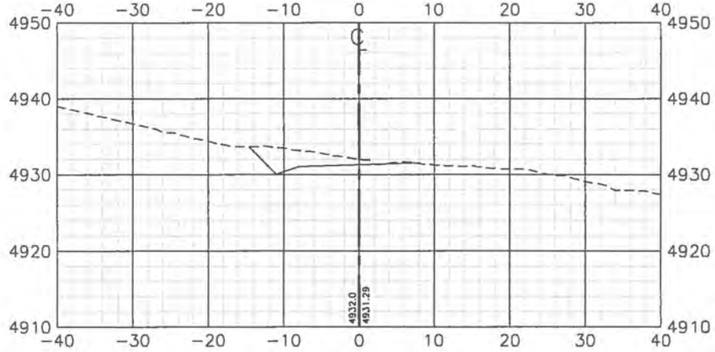
39+00.00



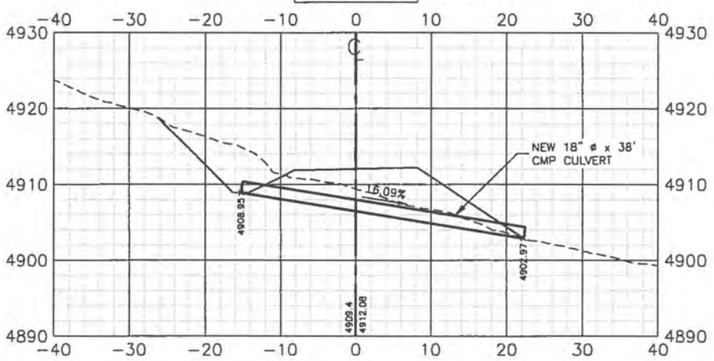
40+50.00



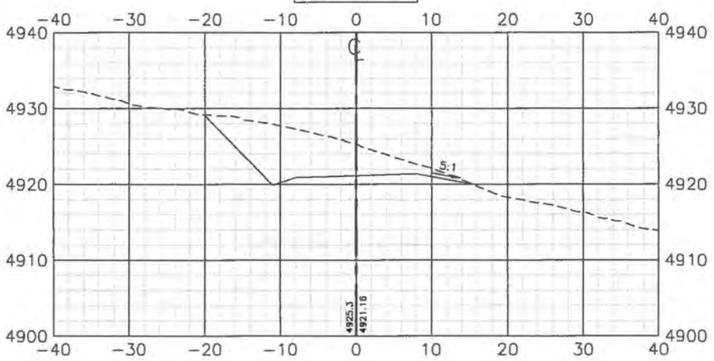
41+50.00



SKEWED 38+50.00 CL CULVERT



40+00.00



ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

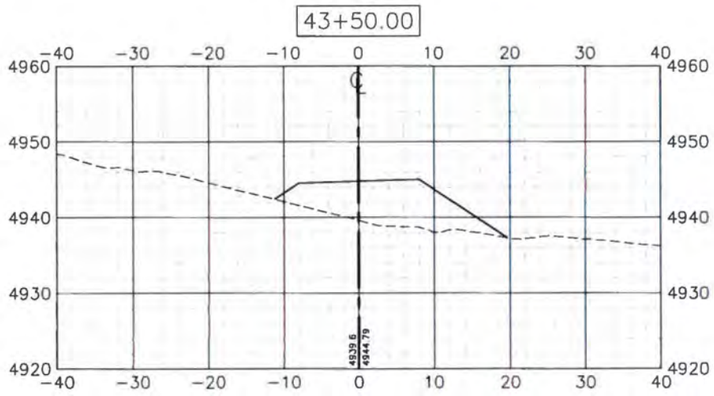
ROADWAY CROSS-SECTIONS

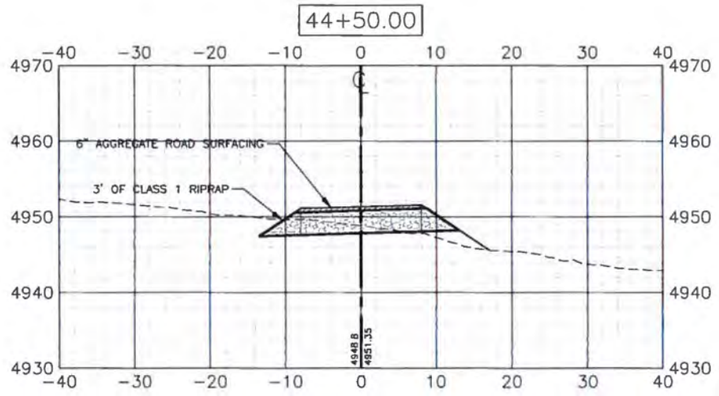
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

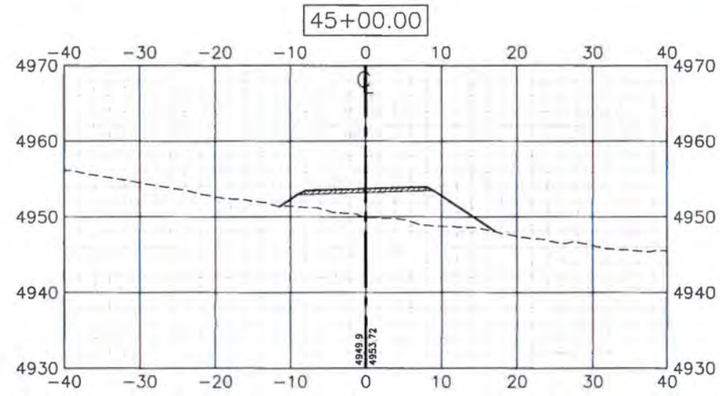
SHEET NO. 25 OF 38

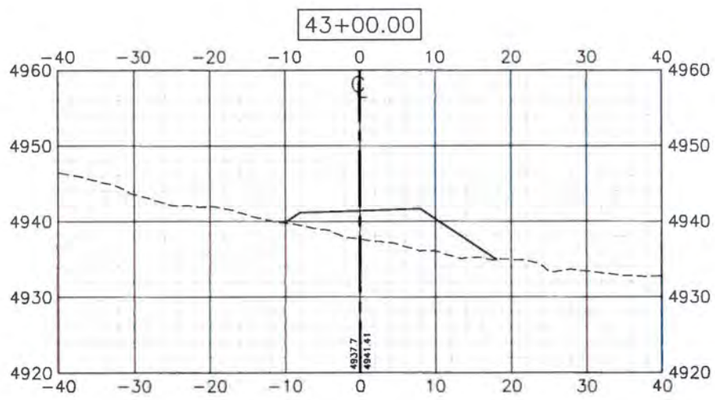
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-25-Road No. 4353 Roadway Cross-Sections.dwg

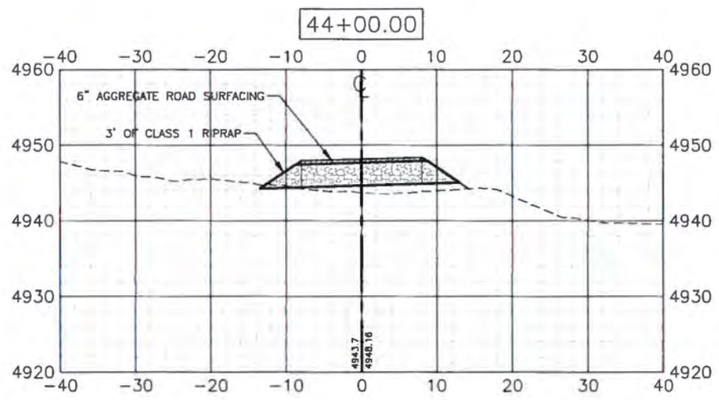
90% SUBMITTAL

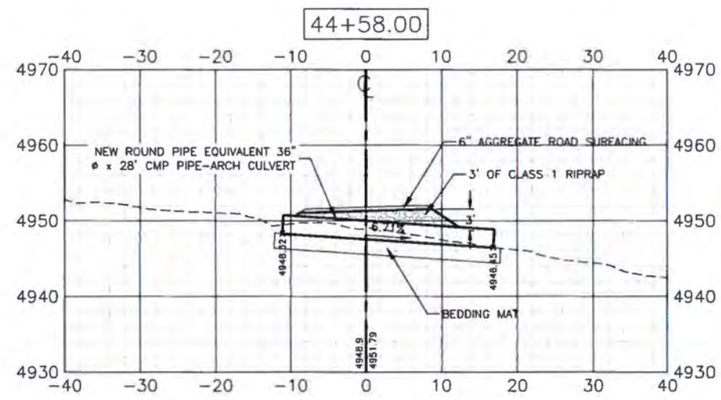


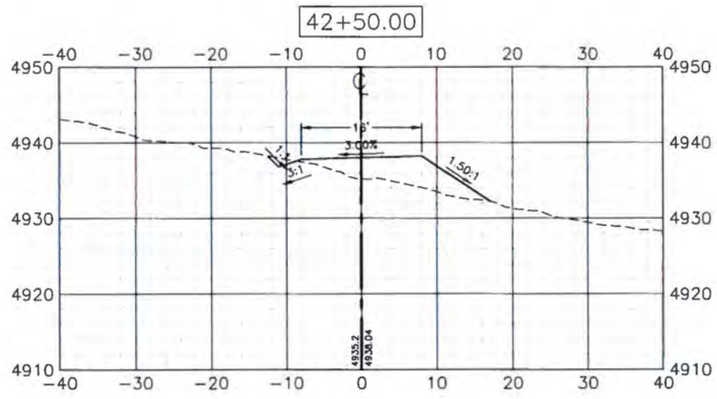


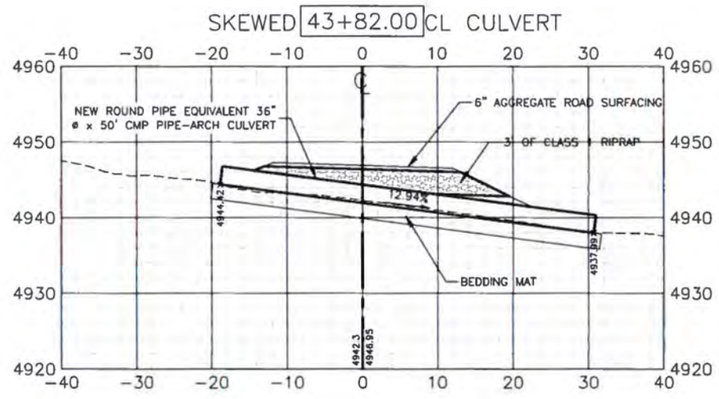












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

ROADWAY CROSS-SECTIONS

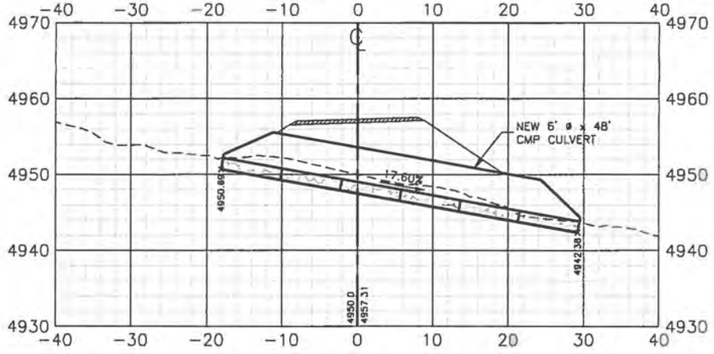
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 26 OF 38

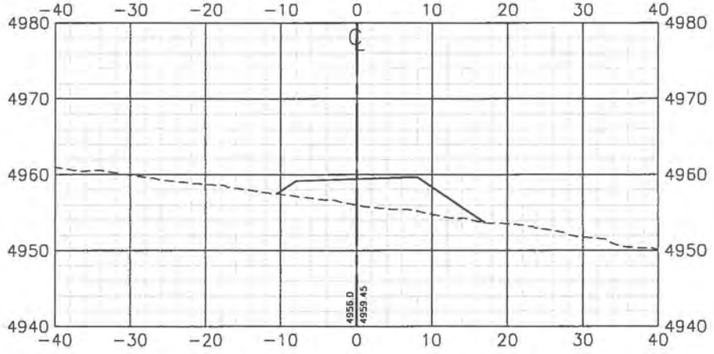
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-26-Road No. 4353 Roadway Cross-Sections.dwg

90% SUBMITTAL

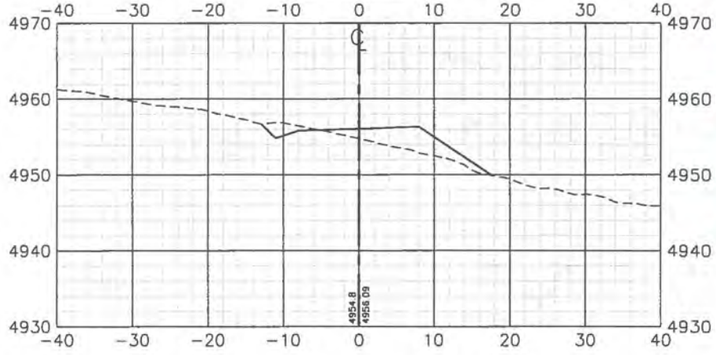
46+08.45



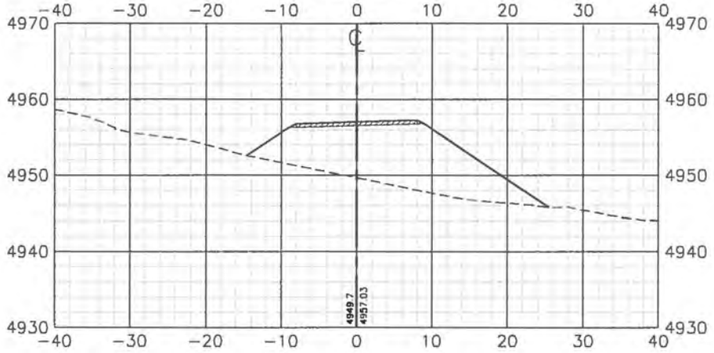
47+50.00



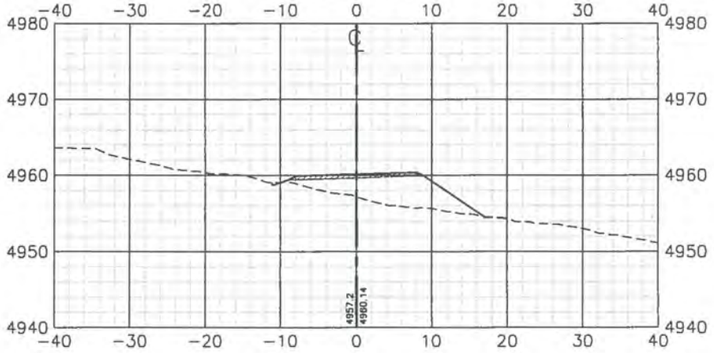
48+00.00



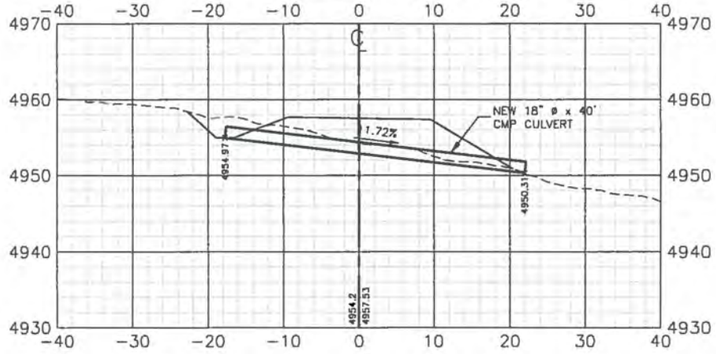
46+00.00



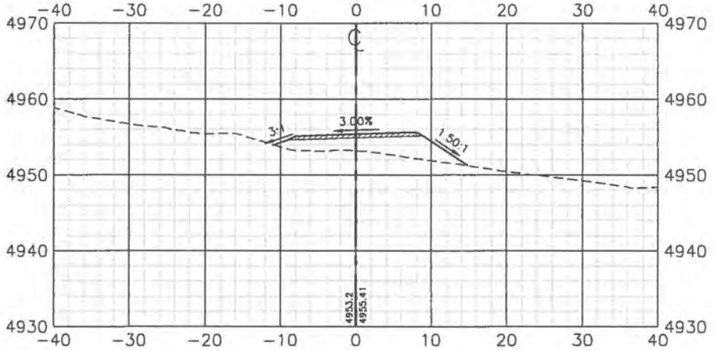
47+00.00



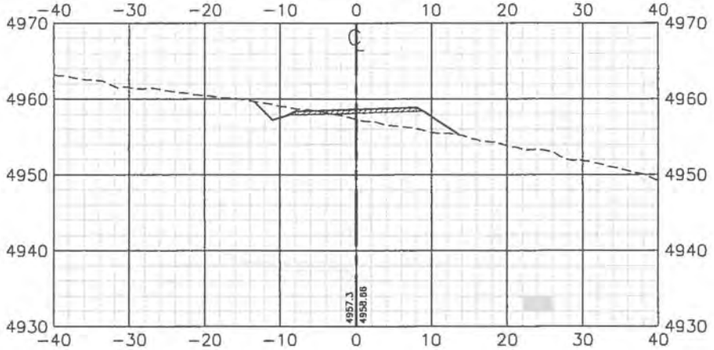
SKEWED 47+82.00 CL CULVERT



45+50.00



46+50.00



ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
US DEPARTMENT OF AGRICULTURE
REGION ONE

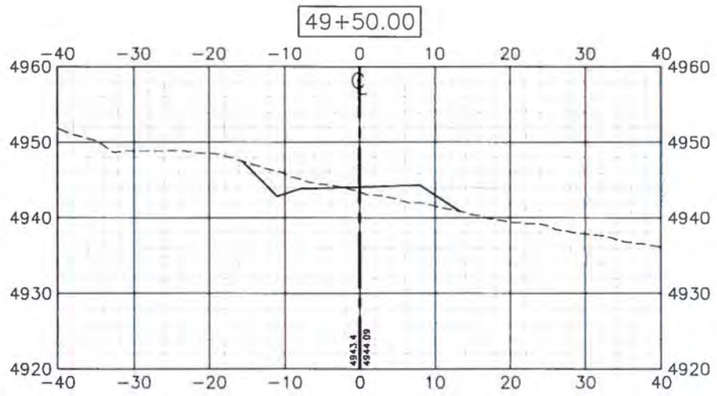
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

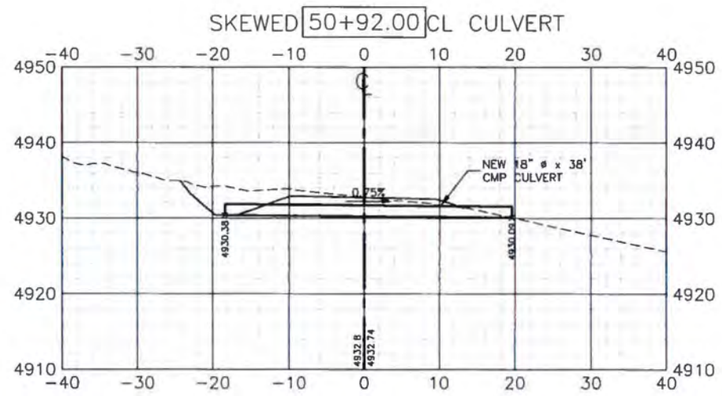
ROADWAY CROSS-SECTIONS

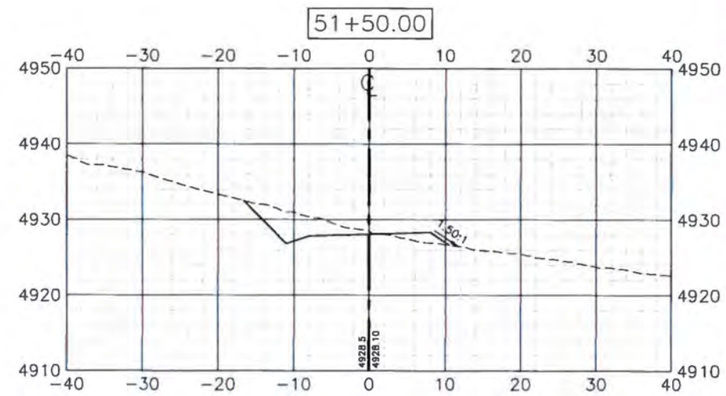
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

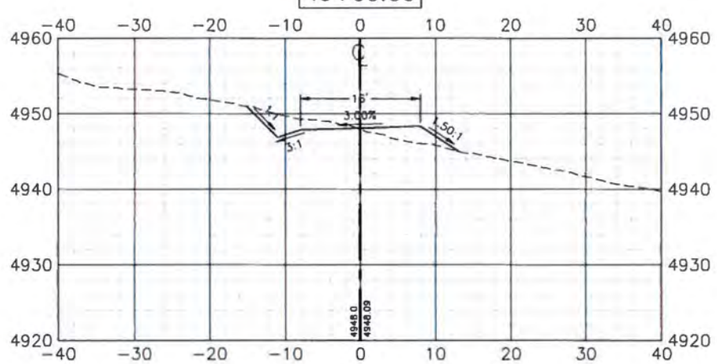
SHEET NO. 27 OF 38

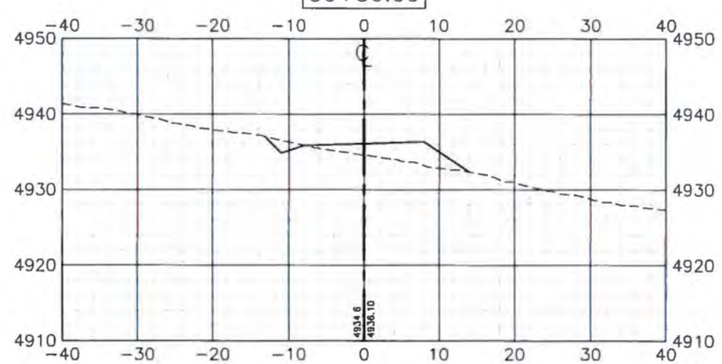
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-27-Road No. 4353 Roadway Cross-Sections.dwg

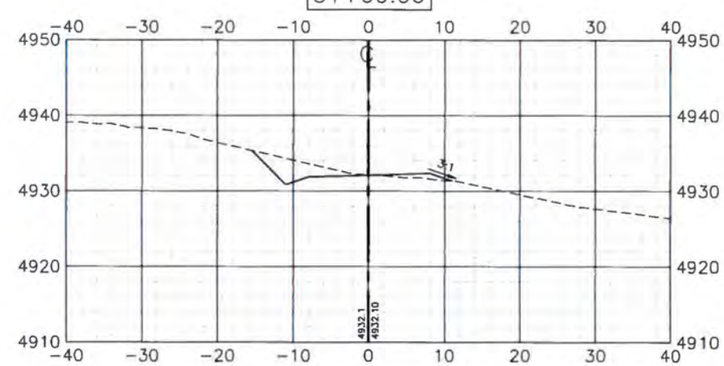


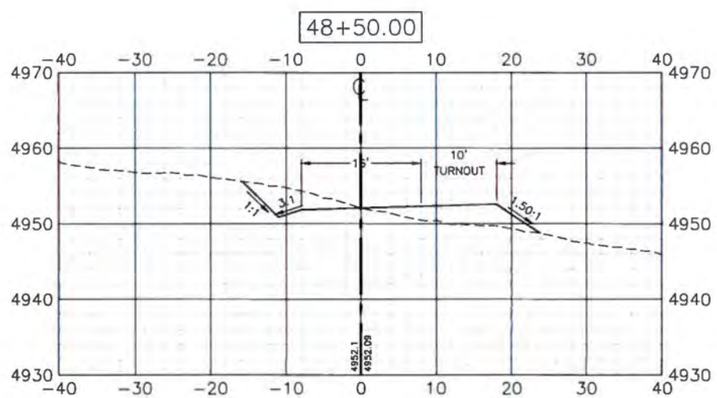


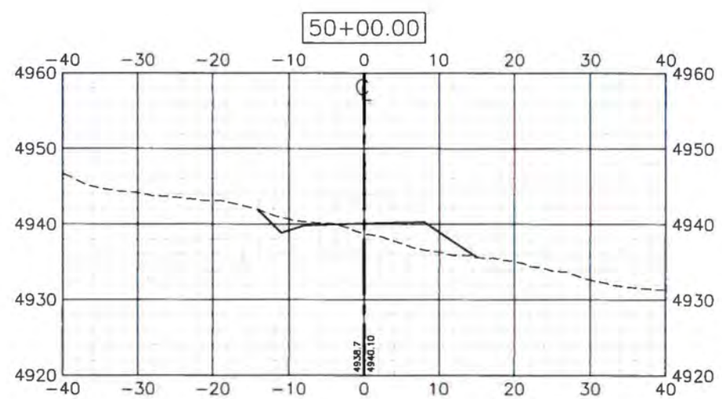












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8827

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

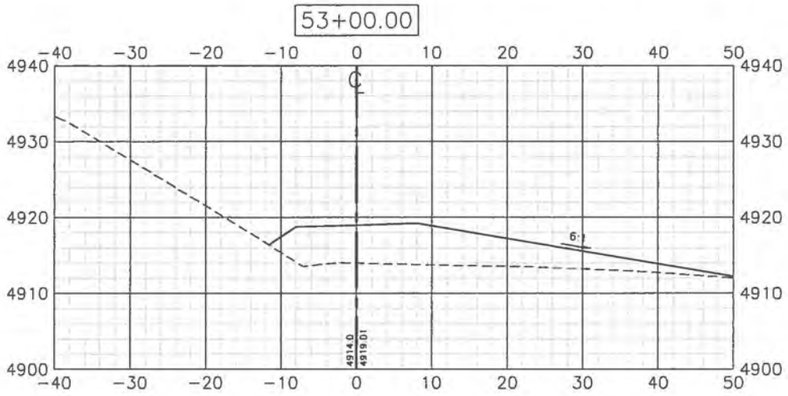
ROADWAY CROSS-SECTIONS

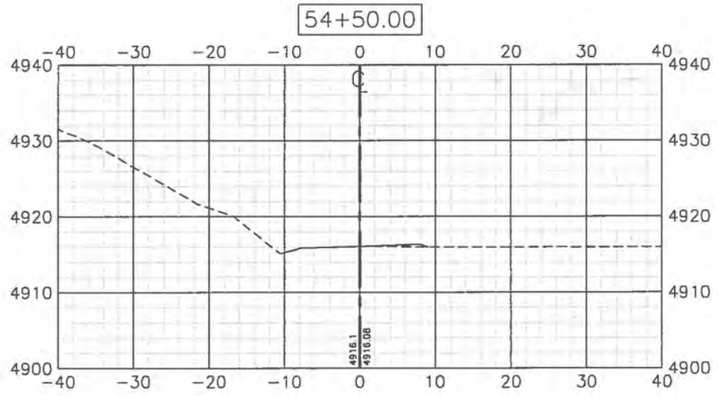
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

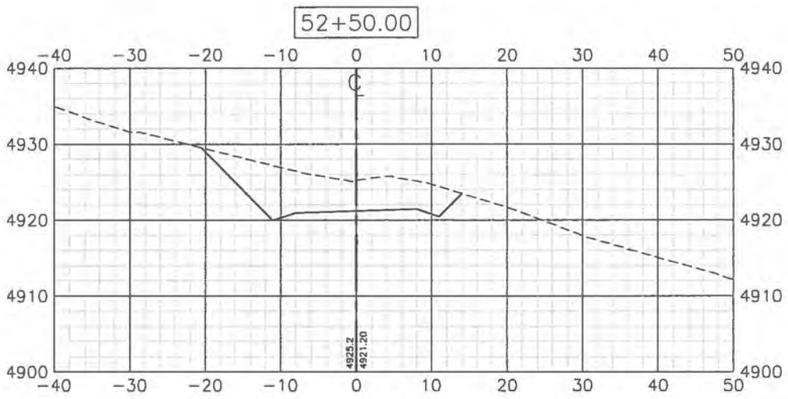
SHEET NO. 28 OF 38

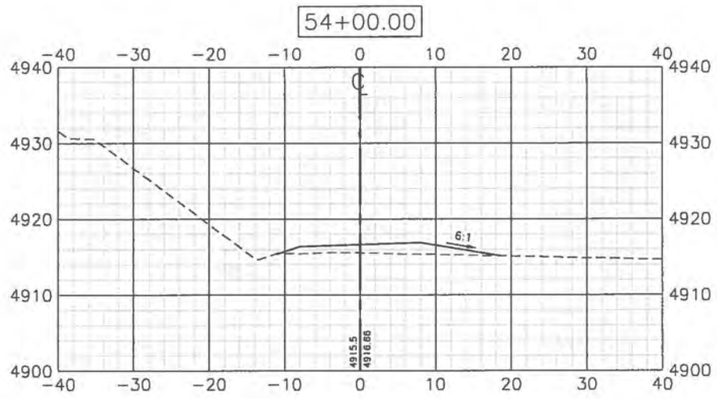
F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-28-Road No. 4353 Roadway Cross-Sections.dwg

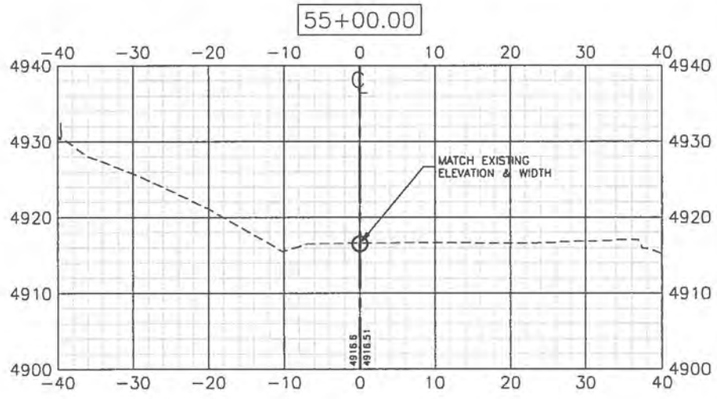
90% SUBMITTAL

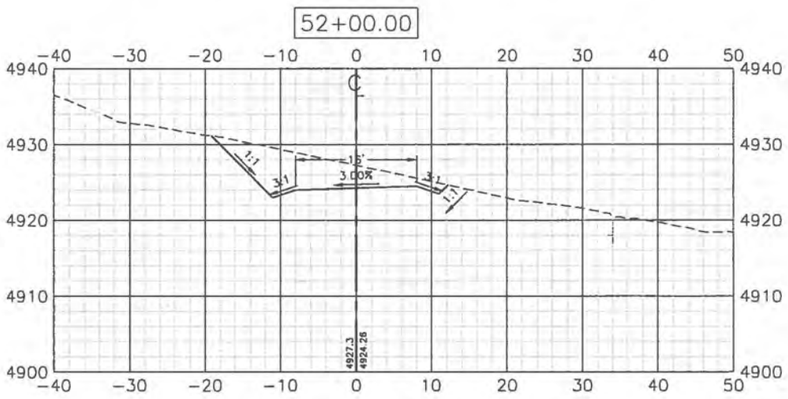


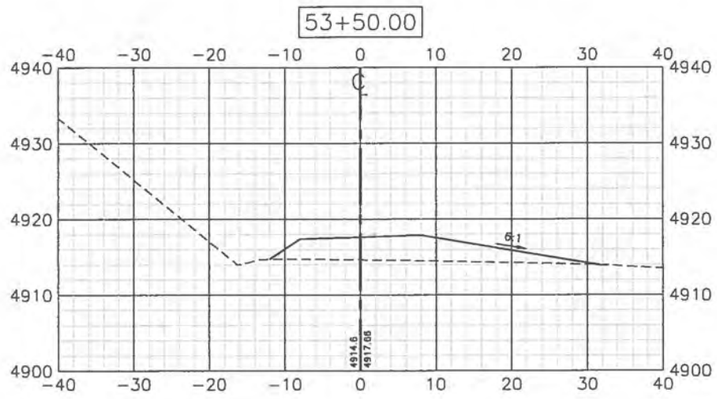












ROADWAY CROSS-SECTIONS

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

ROADWAY CROSS-SECTIONS

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	1				29 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	2				

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-29-Road No. 4353 Roadway Cross-Sections.dwg

ROADWAY CENTERLINE COORDINATE STAKING TABLE

DESCRIPTION	NORTHING	EASTING	ELEVATION
STA. 0+00.00 BEGIN	1122825.47	988751.11	4671.72
STA. 0+07.42 PC	1122831.90	988747.40	4671.77
STA. 0+50.00	1122868.27	988725.26	4672.09
STA. 1+00.00	1122909.58	988697.10	4672.47
STA. 1+50.00	1122949.26	988666.69	4672.84
STA. 1+63.67 PT	1122959.81	988658.00	4672.95
STA. 2+00.00	1122987.67	988634.69	4673.22
STA. 2+24.41 CL 18" CMP CROSS-DRAIN	1123006.39	988619.02	4673.40
STA. 2+50.00	1123026.01	988602.60	4673.59
STA. 2+54.74 PC	1123029.65	988599.55	4673.63
STA. 3+00.00	1123065.62	988572.12	4673.99
STA. 3+50.00	1123108.07	988545.73	4674.99
STA. 3+61.88 PT	1123118.52	988540.09	4675.35
STA. 4+00.00	1123152.29	988522.40	4676.83
STA. 4+50.00	1123196.58	988499.20	4679.52
STA. 5+00.00	1123240.87	988476.00	4683.02
STA. 5+50.00	1123285.16	988452.79	4686.77
STA. 6+00.00	1123329.45	988429.59	4690.52
STA. 6+50.00	1123373.74	988406.39	4694.27
STA. 6+70.97	1123392.32	988396.66	4695.84
STA. 7+06.49	1123423.17	988379.07	4698.50
STA. 7+07.00 CL 18" CMP CROSS-DRAIN	1123423.61	988378.80	4698.54
STA. 7+50.00	1123460.18	988356.20	4701.76
STA. 7+50.16 PC	1123460.32	988356.11	4701.78
STA. 8+00.00	1123503.35	988330.98	4705.51
STA. 8+50.00	1123547.73	988307.95	4709.26
STA. 9+00.00	1123593.19	988287.16	4713.01
STA. 9+14.88 DRAIN DIP	1123606.92	988281.42	4714.12
STA. 9+50.00	1123639.65	988268.68	4716.76
STA. 10+00.00	1123686.96	988252.53	4720.50
STA. 10+26.67 PT	1123712.52	988244.90	4722.50
STA. 10+50.00	1123734.96	988238.52	4724.25
STA. 11+00.00	1123783.05	988224.84	4728.00
STA. 11+50.00	1123831.14	988211.16	4731.75
STA. 12+00.00 CL 18" CMP CROSS-DRAIN	1123879.23	988197.48	4735.50
STA. 12+50.00	1123927.33	988183.81	4739.24
STA. 13+00.00	1123975.42	988170.13	4742.99
STA. 13+15.00 DRAIN DIP	1123989.85	988166.03	4744.12
STA. 13+50.00	1124023.51	988156.45	4746.74
STA. 13+58.05 PC	1124031.26	988154.25	4747.34
STA. 14+00.00	1124071.08	988141.10	4750.49
STA. 14+50.00	1124116.90	988121.13	4754.24
STA. 14+94.95 PT	1124156.20	988099.35	4757.61
STA. 15+00.00 18" CMP CROSS-DRAIN	1124160.50	988096.71	4757.98
STA. 15+50.00	1124203.11	988070.54	4761.73
STA. 16+00.00	1124245.71	988044.36	4765.48
STA. 16+50.00	1124288.31	988018.19	4769.23
STA. 16+70.40 BEGIN AGG. SURFACING	1124305.70	988007.51	4770.76
STA. 16+90.42 PC	1124322.75	987997.03	4772.26
STA. 17+00.00	1124331.01	987992.18	4772.95
STA. 17+50.00	1124376.74	987972.16	4775.91
STA. 17+70.41 CL 6' DIA. CULV	1124396.40	987966.69	4776.79
STA. 1771.79 PT	1124397.74	987966.38	4776.84
STA. 18+00.00	1124425.24	987960.07	4777.76
STA. 18+50.00	1124473.97	987948.90	4779.55

ROADWAY CENTERLINE COORDINATE STAKING TABLE

DESCRIPTION	NORTHING	EASTING	ELEVATION
STA. 18+70.41 END AGGREGATE SURFACING	1124493.86	987944.33	4780.52
STA. 19+00.00 CL 18" CMP CROSS-DRAIN	1124522.71	987937.72	4782.16
STA. 19+22.64 PC	1124544.77	987932.66	4783.62
STA. 19+39.64 DRAIN DIP	1124561.32	987928.75	4784.82
STA. 19+50.00	1124571.37	987926.26	4785.60
STA. 20+00.00	1124619.59	987913.05	4789.59
STA. 20+50.00	1124667.25	987897.93	4793.59
STA. 21+00.00	1124714.26	987880.91	4797.59
STA. 21+50.00	1124760.55	987862.03	4801.58
STA. 22+00.00	1124806.06	987841.31	4805.03
STA. 22+50.00	1124850.69	987818.79	4807.23
STA. 22+68.00 CL 18" CMP CROSS-DRAIN	1124866.54	987810.25	4807.77
STA. 22+82.95 PT	1124879.60	987802.98	4808.22
STA. 23+00.00	1124894.45	987794.60	4808.73
STA. 23+50.00	1124938.00	987770.03	4810.23
STA. 23+64.00 CL 18" CMP CROSS-DRAIN	1124950.19	987763.16	4810.65
STA. 24+00.00	1124981.55	987745.47	4811.91
STA. 24+50.00	1125025.09	987720.90	4814.47
STA. 25+00.00	1125068.64	987696.33	4818.01
STA. 25+50.00	1125112.19	987671.76	4821.93
STA. 26+50.00	1125198.74	987621.68	4829.78
STA. 27+00.00	1125241.28	987595.40	4833.71
STA. 27+50.00	1125283.28	987568.28	4837.63
STA. 28+00.00 CL 18" CMP CROSS DRAIN	1125324.74	987540.33	4841.56
STA. 28+50.00	1125365.62	987511.55	4845.48
STA. 29+00.00	1125405.93	987481.96	4849.41
STA. 29+14.95 DRAIN DIP	1125417.86	987472.96	4850.58
STA. 29+50.00	1125445.63	987451.57	4853.33
STA. 30+00.00	1125484.72	987420.39	4857.26
STA. 30+16.98 PT	1125497.85	987409.63	4858.59
STA. 30+50.00	1125523.32	987388.61	4861.18
STA. 31+00.00	1125561.87	987356.78	4865.11
STA. 31+50.00	1125600.43	987324.95	4869.03
STA. 32+00.00 CL 18" CMP CROSS-DRAIN	1125638.99	987293.12	4872.96
STA. 32+50.00	1125677.55	987261.29	4876.88
STA. 33+00.00	1125716.11	987229.46	4880.81
STA. 33+50.00	1125754.67	987197.63	4884.74
STA. 34+00.00	1125793.23	987165.80	4888.66
STA. 34+15.00 DRAIN DIP	1125804.80	987156.25	4889.84
STA. 34+50.00	1125831.79	987133.97	4892.59
STA. 34+84.14 PC	1125858.12	987112.23	4895.27
STA. 35+00.00	1125870.23	987101.99	4896.51
STA. 35+50.00	1125906.70	987067.81	4900.44
STA. 36+00.00	1125940.44	987030.92	4904.36
STA. 36+50.00	1125971.25	986991.56	4908.00
STA. 37+00.00 DRAIN DIP	1125998.94	986949.94	4909.88
STA. 37+22.34 PT	1126010.26	986930.68	4910.09
STA. 37+50.00	1126023.87	986906.60	4910.09
STA. 37+93.66 PC	1126045.34	986868.59	4910.49
STA. 38+00.00	1126048.49	986863.09	4910.60
STA. 38+50.00 CL 18" CMP CROSS-DRAIN	1126075.76	986821.20	4912.08
STA. 39+00.00	1126107.06	986782.24	4914.52
STA. 39+50.00	1126142.10	986746.60	4917.79
STA. 39+86.39 PT	1126169.75	986722.95	4920.24
STA. 40+00.00	1126180.41	986714.49	4921.16

ROADWAY CENTERLINE COORDINATE STAKING TABLE

DESCRIPTION	NORTHING	EASTING	ELEVATION
STA. 40+50.00	1126219.57	986683.40	4924.54
STA. 40+82.84 PC	1126245.29	986662.98	4926.75
STA. 41+00.00	1126258.35	986651.85	4927.91
STA. 41+50.00	1126291.68	986614.69	4931.29
STA. 41+63.32 PT	1126299.25	986603.74	4932.19
STA. 42+00.00	1126319.28	986573.01	4934.66
STA. 42+50.00	1126346.59	986531.13	4938.04
STA. 42+58.79 PC	1126351.39	986523.76	4938.63
STA. 43+00.00	1126374.84	986489.88	4941.41
STA. 43+50.00	1126405.73	986450.57	4944.79
STA. 43+62.00 BEGIN RIPRAP/SURFACING	1126413.52	986441.45	4945.60
STA. 43+82.00 CL 36" x 50' CMP EQUIV.	1126426.84	986426.53	4946.95
STA. 44+00.00	1126439.17	986413.41	4948.16
STA. 44+50.00	1126475.01	986378.56	4951.35
STA. 44+58.00 CL 36" x 28' CMP EQUIV.	1126480.95	986373.21	4951.79
STA. 45+00.00	1126513.09	986346.18	4953.72
STA. 45+09.22 PT	1126520.34	986340.49	4954.07
STA. 45+50.00	1126552.58	986315.51	4955.41
STA. 46+00.00	1126592.11	986284.89	4957.03
STA. 46+08.45 CL 72" CMP	1126598.79	986279.72	4957.31
STA. 46+41.26 PC	1126624.73	986259.63	4958.37
STA. 46+50.00	1126631.68	986254.33	4958.66
STA. 47+00.00	1126673.17	986226.46	4960.14
STA. 47+50.00	1126717.23	986202.87	4959.45
STA. 47+82.00 CL 18" CMP CROSS-DRAIN	1126746.57	986190.13	4957.53
STA. 48+00.00	1126763.42	986183.79	4956.09
STA. 48+50.00	1126811.29	986169.42	4952.09
STA. 49+00.00	1126860.36	986159.90	4948.09
STA. 49+50.00	1126910.13	986155.33	4944.09
STA. 49+50.10 PT	1126910.22	986155.33	4944.09
STA. 49+60.00 DRAIN DIP	1126920.12	986154.92	4943.29
STA. 50+00.00	1126960.08	986153.26	4940.10
STA. 50+32.53 PC	1126992.58	986151.91	4937.49
STA. 50+50.00	1127010.00	986150.58	4936.10
STA. 50+92.00 CL 18" CMP CROSS-DRAIN	1127051.15	986142.44	4932.74
STA. 51+00.00	1127058.81	986140.11	4932.10
STA. 51+50.00	1127104.56	986120.16	4928.10
STA. 52+00.00	1127145.44	986091.51	4924.26
STA. 52+16.81 PT	1127157.79	986080.12	4923.13
STA. 52+50.00	1127181.42	986056.81	4921.20
STA. 53+00.00	1127217.02	986021.70	4919.01
STA. 53+25.00 DRAIN DIP	1127234.82	986004.14	4918.23
STA. 53+50.00	1127252.62	985986.59	4917.66
STA. 53+66.27 PC	1127264.20	985975.16	4917.34
STA. 53+98.26 PT	1127286.25	985951.99	4916.70
STA. 54+00.00	1127287.40	985950.69	4916.66
STA. 54+50.00	1127320.68	985913.37	4916.08
STA. 55+00.00 END	1127353.96	985876.06	4916.51

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

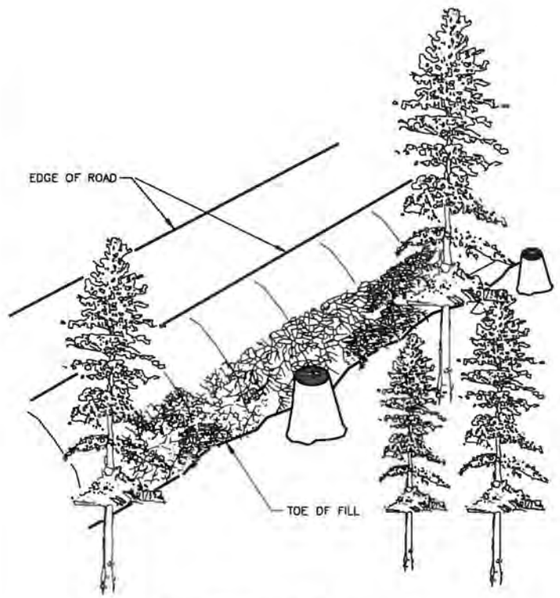
FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

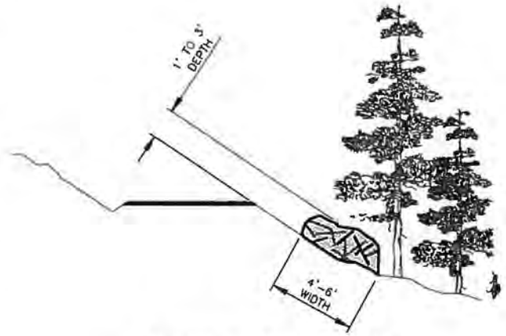
ROAD NO. 4353 STAKING TABLE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	1				30 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	2				

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-30-RoadwayStakingTable.dwg



TYPICAL INSTALLATION

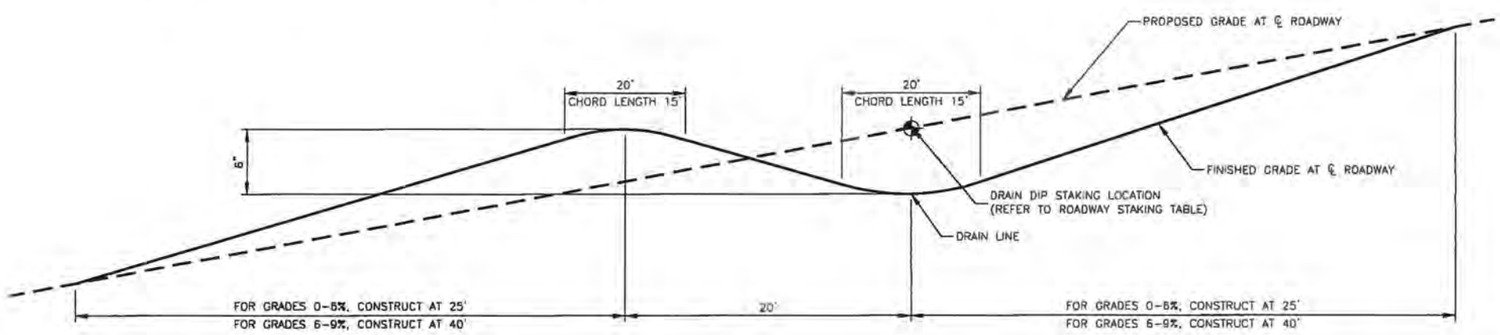


WINDROW DIMENSIONS

(A/31) SLASH FILTER WINDROW DETAIL
NOT TO SCALE

SLASH FILTER WINDROW NOTES:

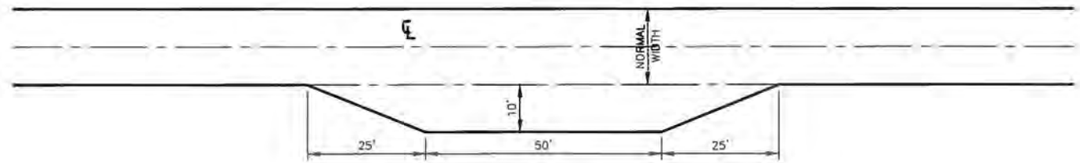
1. CONTRACTOR SHALL UTILIZE CLEARING AND GRUBBING MATERIAL TO ERECT SLASH FILTER WINDROW.
2. SLASH, LIMBS AND TOPS MUST BE SMALLER THAN 10 FEET LONG AND 5 INCHES IN DIAMETER. DO NOT USE STUMPS AND ROOT WADS.
3. PLACE SLASH AT THE TOE OF THE NEW ROADWAY FILL SLOPES AROUND CULVERT INLETS AND AS DIRECTED BY THE C.O. PLACE SLASH AND TAMP INTO PLACE. SLASH SHOULD BE TAMPED SO IT IS EMBEDDED APPROXIMATELY 6 INCHES INTO THE SURFACE TO PREVENT WATER FROM RUNNING UNDER THE WINDROW.
4. DO NOT INTERFERE WITH THE FUNCTIONING OF DRAINAGE STRUCTURES OR BLOCK STREAM CHANNELS WITH WINDROWS. ALL LOCATIONS WILL BE STAKED OR FLAGGED BY THE C.O.
5. PLACE STUMPS ON DOWNHILL SIDE OF WINDROW AND PLACED IN A POSITION TO PREVENT ROLLING, AS DIRECTED BY THE C.O.



DRAIN DIP NOTES:

1. MINIMUM CROSS SLOPE OF DRAINLINE: 2% MINIMUM AND 4% MAXIMUM.
2. TAPER LENGTHS SHALL BE WITHIN 10% OF LISTED LENGTHS.

(B/31) DRAIN DIP TYPICAL SECTION DETAIL
NOT TO SCALE



(C/31) STANDARD TURNOUT - SINGLE LANE
NOT TO SCALE

90% SUBMITTAL

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

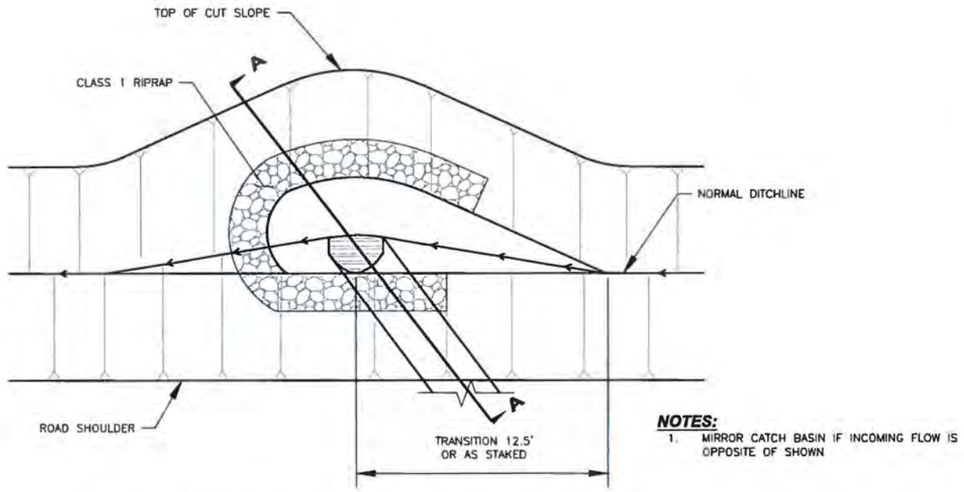
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

MISCELLANEOUS DETAILS

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 31 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-31-Miscellaneous Details1.dwg

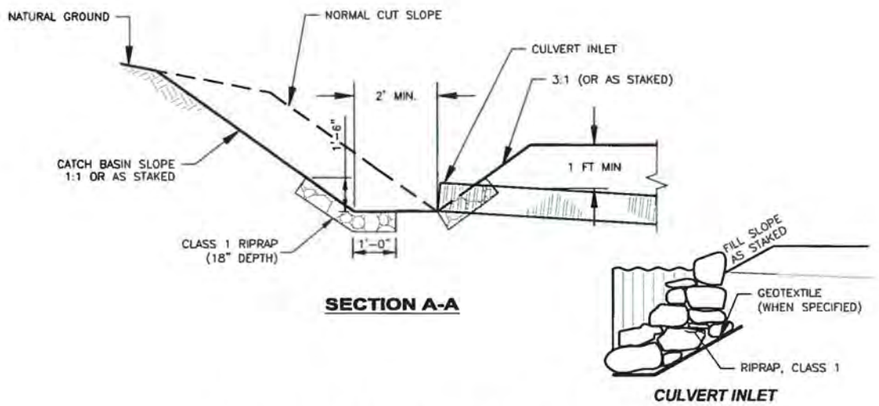


NOTES:

1. MIRROR CATCH BASIN IF INCOMING FLOW IS OPPOSITE OF SHOWN

CATCH BASIN TYPICAL SECTION PLAN

NOT TO SCALE



SECTION A-A

CULVERT INLET

CATCH BASIN DETAILS

NOT TO SCALE

90% SUBMITTAL

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-32-Miscellaneous Details.dwg

PREPARED BY:

GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

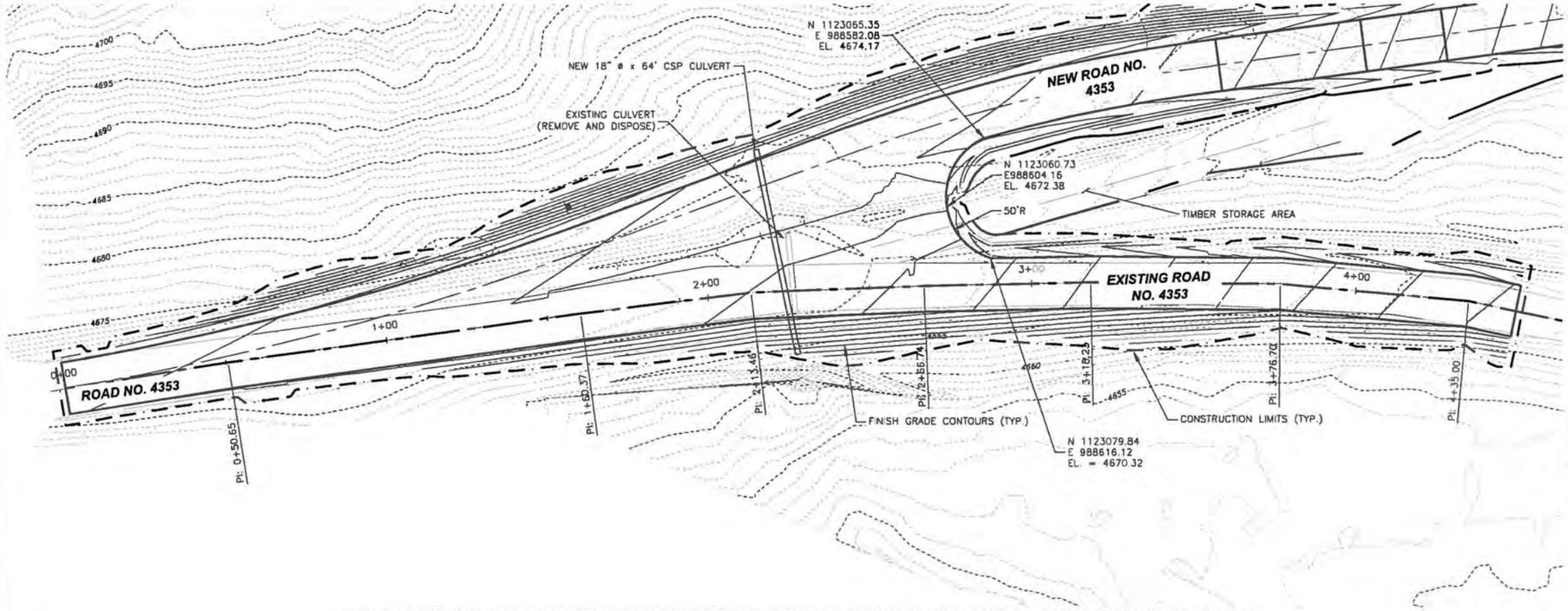
MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

MISCELLANEOUS DETAILS

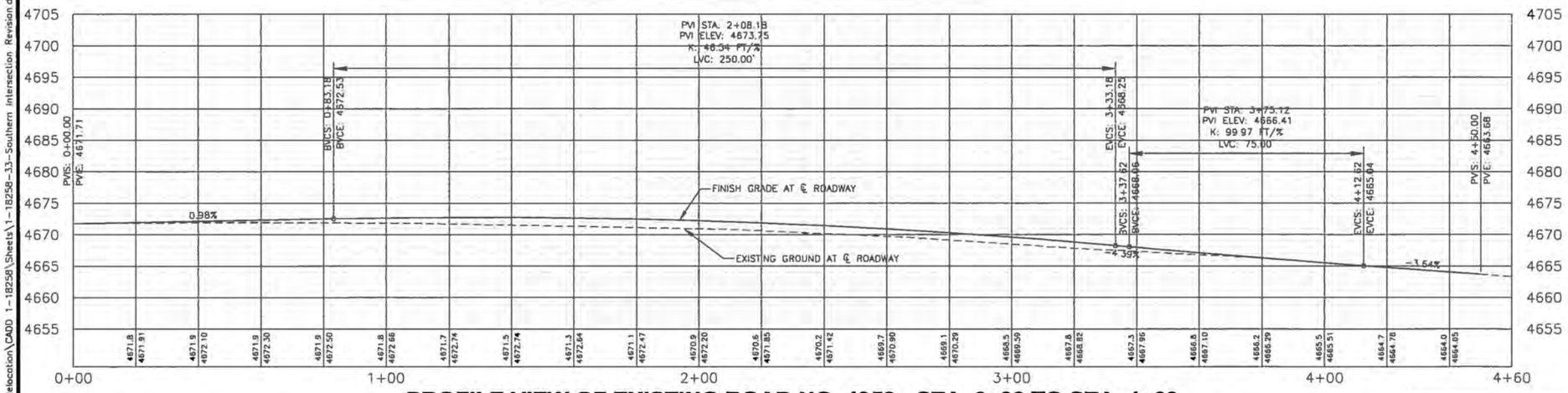
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 32 OF 38



PLAN VIEW OF SOUTHERN INTERSECTION REVISION - STA. 0+00 TO STA. 4+60

0 20 40
SCALE IN FEET



PROFILE VIEW OF EXISTING ROAD NO. 4353 - STA. 0+00 TO STA. 4+60

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 20'

NOTES:

1. UTILIZE TYPICAL ROADWAY SECTION ON SHEET 2 FOR EXISTING ROAD NO. 4353 IMPROVEMENTS.

90% SUBMITTAL

ROADWAY CENTERLINE COORDINATE STAKING TABLE

DESCRIPTION	NORTHING	EASTING	ELEVATION
STA. 0+00.00 BEGIN	1122825.47	988751.11	4671.72
STA. 0+50.65 PI	1122869.76	988726.53	4672.21
STA. 1+00	1122913.40	988703.49	4672.66
1+60.37 PI	1122966.79	988675.31	4672.64
STA. 2+00.00	1123002.11	988657.34	4672.20
STA. 2+13.46 PI	1123014.11	988651.24	4671.98
STA. 2+66.74	1123063.43	988631.06	4670.70
STA. 3+00.00	1123094.44	988619.05	4669.59
STA. 3+18.23 PI	1123111.44	988612.47	4668.89
STA. 3+50.00	1123141.38	988601.86	4667.52
STA. 3+76.70	1123166.55	988592.94	4666.42
STA. 4+00.00	1123189.08	988586.98	4665.51
STA.4+35.00 PI	1123222.91	988578.04	4664.23
STA. 4+50.00 END	1123237.76	988575.87	4663.68

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

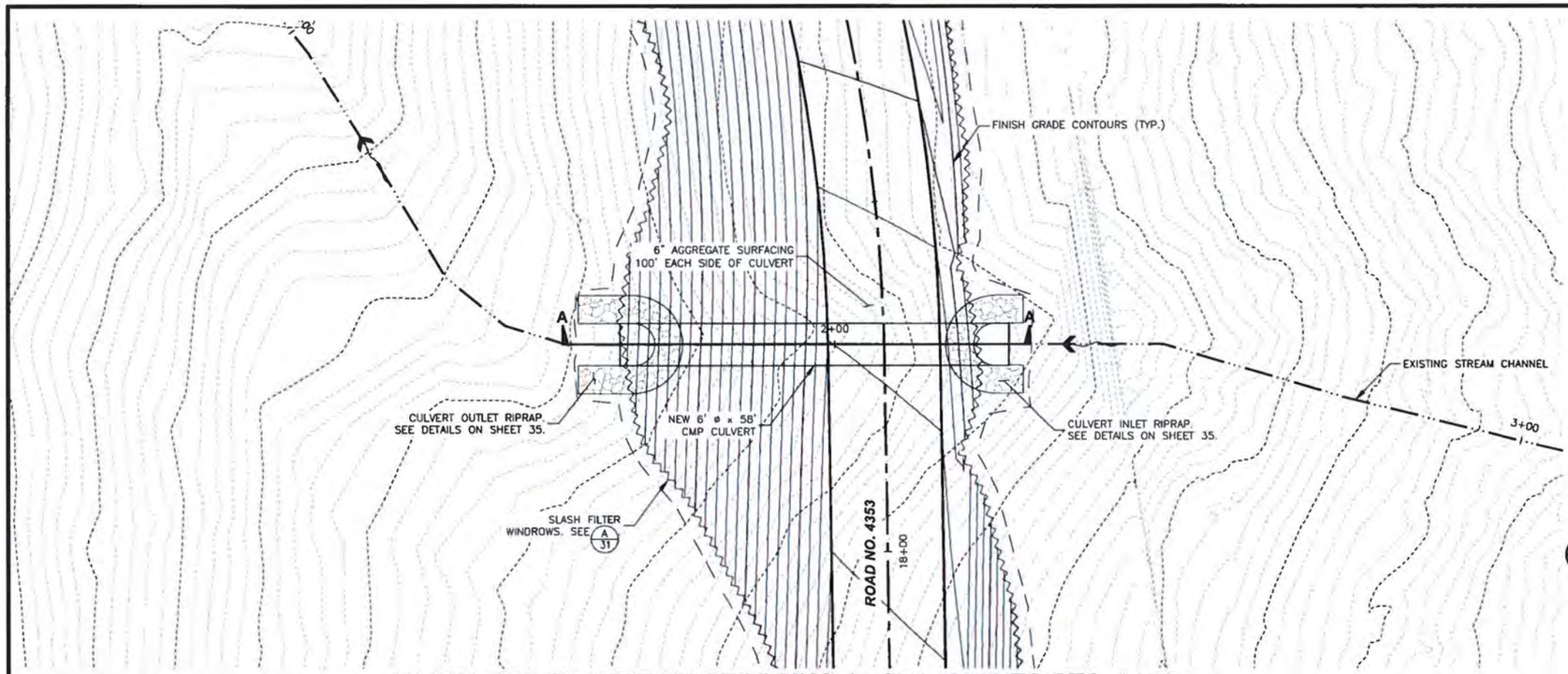
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

SOUTHERN INTERSECTION REVISION

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

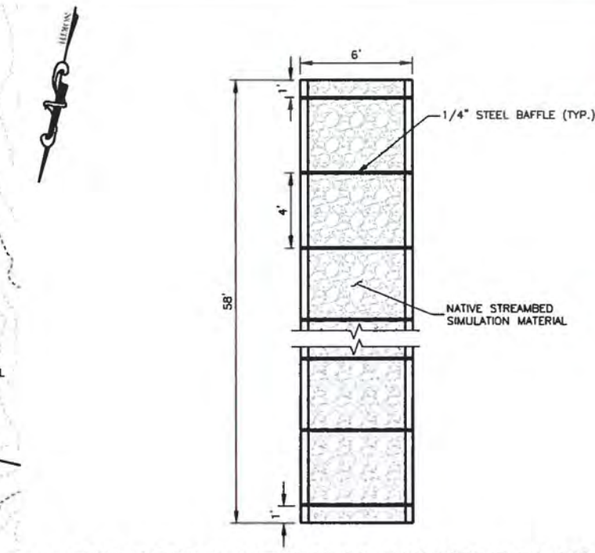
SHEET NO.
33 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-33-Southern Intersection Revision.dwg

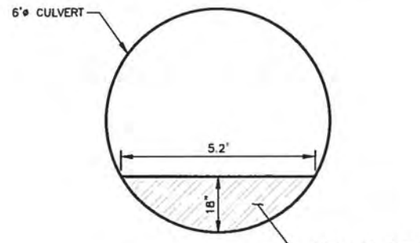


PLAN VIEW OF STREAM CROSSING 1 - STA. 1+00 TO STA. 3+00

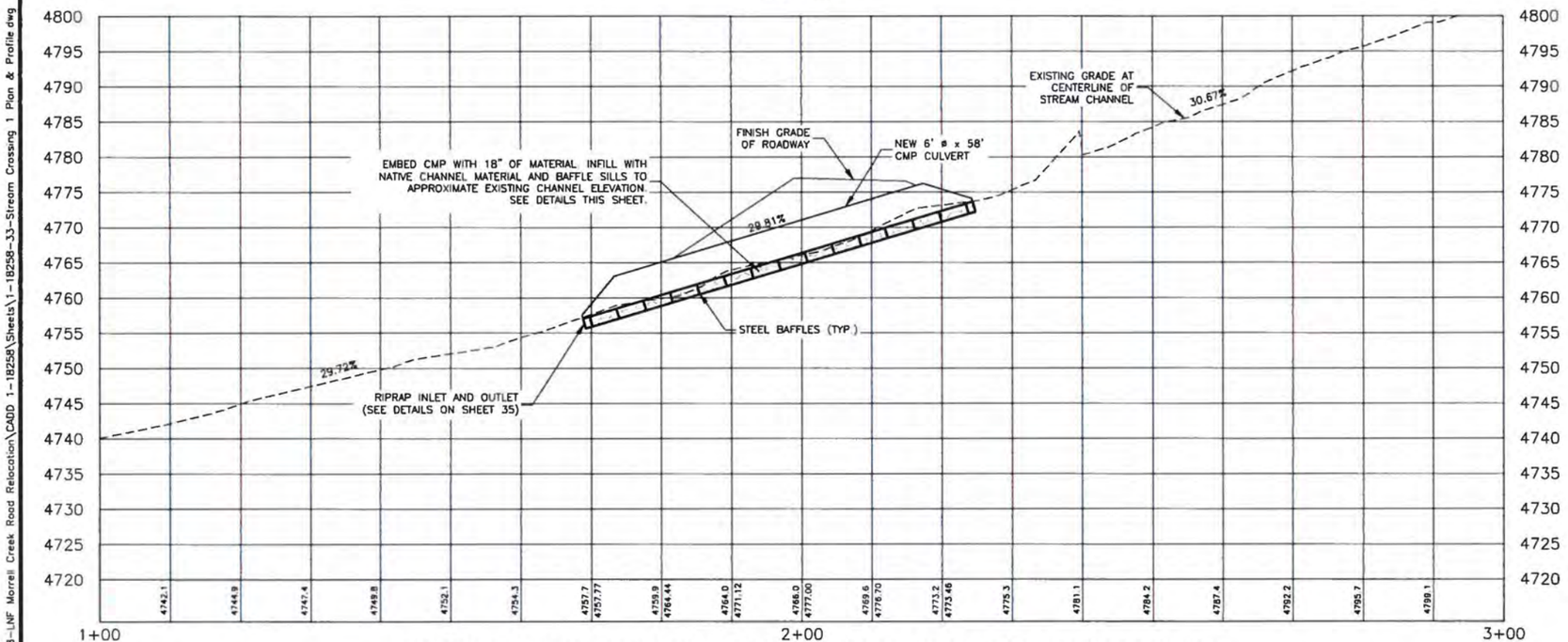
0 10 20
SCALE IN FEET



A/34 **SECTION A-A TYPICAL CULVERT PLAN VIEW**
NOT TO SCALE



B/34 **STEEL BAFFLE**
NOT TO SCALE



PROFILE VIEW OF STREAM CROSSING 1 - STA. 1+00 TO STA. 3+00

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

GENERAL NOTES:

1. SUPPLY AND INSTALLATION OF STEEL BAFFLES IS INDIRECTLY PAID UNDER BID ITEM 60201C.
2. CONTRACTOR SHALL CONNECT BAFFLES PER CULVERT MANUFACTURER'S RECOMMENDATIONS. IF WELDED, SPRAY-GALVANIZE (2 COATS) BAFFLE PLATES AFTER WELDING, INDIRECTLY PAID UNDER BID ITEM 60201C.
3. IF CULVERT SPLICE IS REQUIRED, LOCATE SPLICE HALFWAY BETWEEN BAFFLES.

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

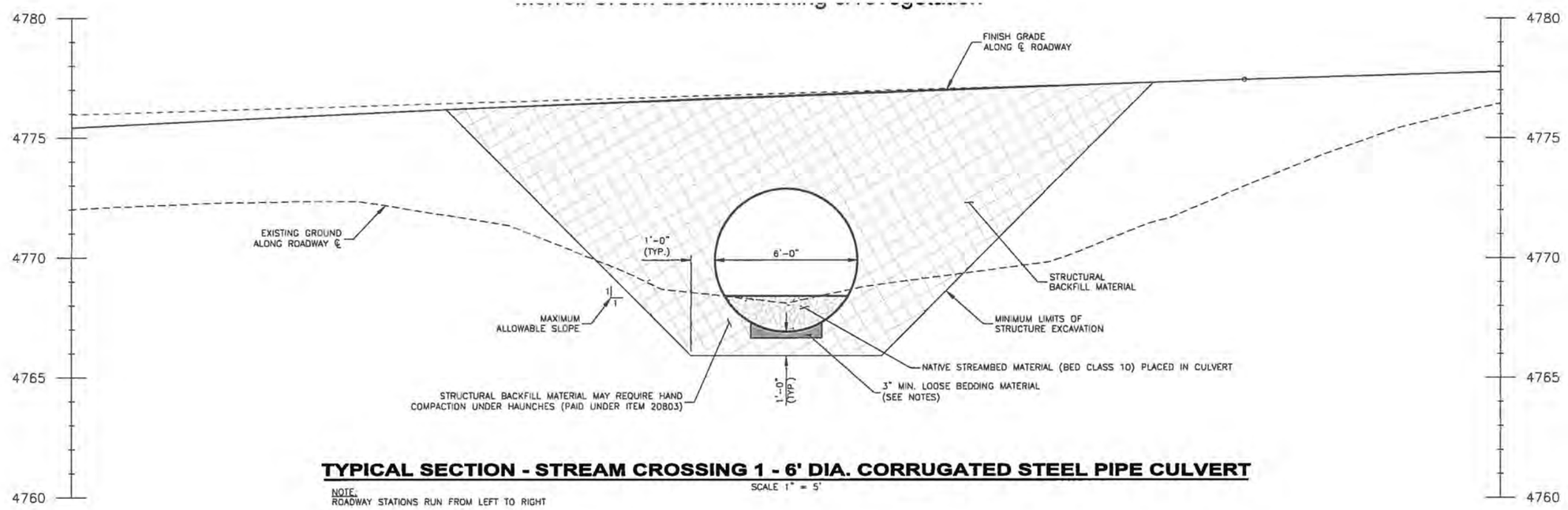
STREAM CROSSING 1 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 34 OF 38

90% SUBMITTAL

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-33-Stream Crossing 1 Plan & Profile.dwg



TYPICAL SECTION - STREAM CROSSING 1 - 6' DIA. CORRUGATED STEEL PIPE CULVERT

NOTE:
ROADWAY STATIONS RUN FROM LEFT TO RIGHT

SCALE 1" = 5'

90% SUBMITTAL

STRUCTURE EXCAVATION NOTES:

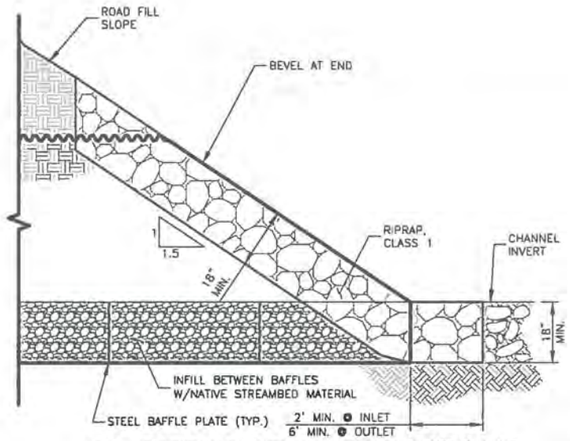
1. STRUCTURE EXCAVATION SHALL BE COMPLETED IN ACCORDANCE WITH FP-14, SECTION 208.
2. LIMITS SHOWN ARE MINIMUM EXCAVATION REQUIREMENTS BASED ON ENGINEERS DETERMINATION OF OSHA SOIL TYPE B AND OSHA EXCAVATION REQUIREMENTS. DETERMINATION IS BASED ON LIMITED DATA AND ACTUAL SITE CONDITIONS MAY VARY.
3. STRUCTURE EXCAVATION QUANTITY SHOWN IS FOR INFORMATION ONLY BASED ON THE LIMITS SHOWN. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES BASED ON THEIR OWN EXCAVATION PLAN.
4. CONTRACTOR SHALL SUBMIT EXCAVATION PLAN TO C.O. FOR APPROVAL. PLAN SHALL INCLUDE DRAWINGS AND WRITTEN OUTLINE ILLUSTRATING AND DESCRIBING PROPOSED EXCAVATION LIMITS, METHODS, EQUIPMENT, LOCATION OF STOCKPILES, AND ESTIMATED QUANTITIES AND COMPLY WITH OSHA EXCAVATION SOIL TYPING AND REQUIREMENTS. CHANGES TO THE EXCAVATION LIMITS SHOWN ON THIS SHEET FOR CONTRACTOR'S DEWATERING METHODS OR OTHER CONTRACTOR CONVENIENCE, MUST BE SHOWN ON THE CONTRACTOR'S PLAN AND ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK IS INDIRECTLY PAID BY ITEM 20803.
5. SUITABLE STRUCTURE EXCAVATION OR ROADWAY EXCAVATION MATERIAL MAY BE UTILIZED AS NATIVE STREAMBED MATERIAL. MATERIALS TO BE APPROVED BY THE C.O. PRIOR TO PLACEMENT. SOME MIXING AND SORTING MAY BE REQUIRED.

DEWATERING AND EROSION CONTROL:

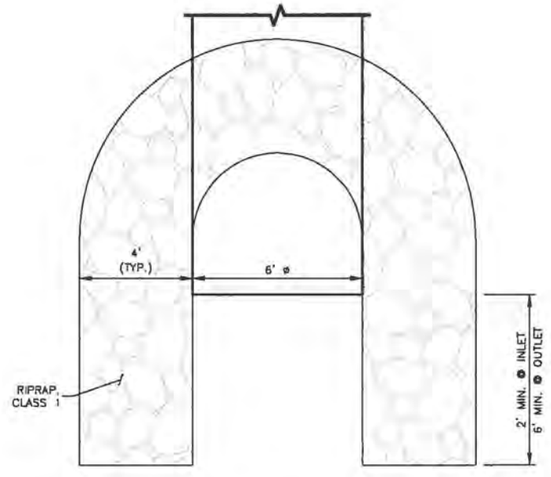
1. PROTECT AGAINST SOIL EROSION AND SEDIMENTATION DURING CONSTRUCTION IN ACCORDANCE WITH FP-14, SECTION 157 AND THE PROJECT PERMITS. CONTRACTOR SHALL PREPARE AND SUBMIT A SOIL EROSION AND SEDIMENT CONTROL PLAN TO C.O. FOR APPROVAL. PLAN SHALL INCLUDE DRAWINGS AND A WRITTEN OUTLINE ILLUSTRATING AND DESCRIBING PROPOSED LAYOUT, METHODS, AND EQUIPMENT.
2. DEWATER THE EXCAVATION IN ACCORDANCE WITH FP-14 SECTIONS 208, 209, 157 AND THE REQUIREMENTS ON SHEET 2.
3. CONTRACTOR SHOULD ANTICIPATE WATER INFILTRATING THE EXCAVATIONS.
4. SUBGRADE EXCAVATION, RIPRAP PLACEMENT, AND BACKFILL MATERIALS ARE TO BE COMPLETED PER THE CONTRACT SPECIFICATIONS AND STANDING OR RUNNING WATER IN THE WORK AREA DOES NOT RELIEVE THE CONTRACTOR FROM MEETING THE SPECIFICATIONS.

BACKFILL MATERIALS:

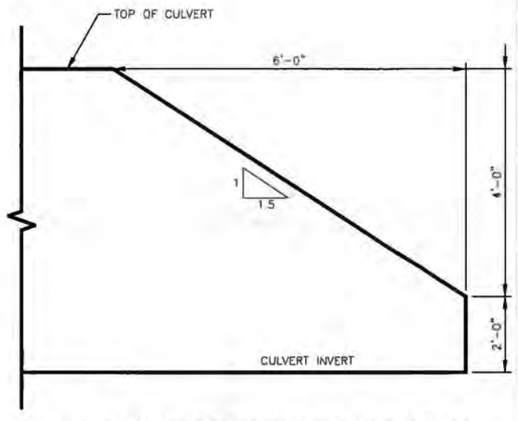
1. ALL STRUCTURAL BACKFILL MATERIAL SHALL MEET THE MATERIAL REQUIREMENTS IN FP-14 SECTION 704.4 AND BE COMPACTED IN ACCORDANCE WITH FP-14 SECTION 208. THE PROCTOR DENSITY FOR BACKFILL MATERIAL(S) SHALL BE OBTAINED IN ACCORDANCE WITH AASHTO T99, METHOD C. SAMPLING AND TESTING IS REQUIRED PER FP-14 TABLE 208-1
2. BACKFILL LIMITS SHOWN ARE MINIMUM REQUIREMENTS. ANY BACKFILL OUTSIDE THE SHOWN LIMITS SHALL BE CONSIDERED ROADWAY EMBANKMENT AND MUST MEET THE REQUIREMENTS OUTLINED IN FSSS 204.
3. BEDDING MATERIAL CONSISTS OF LOOSELY PLACED AGGREGATE SURFACE COURSE. PAYMENT IS INDIRECT TO THE APPROPRIATE CULVERT BID ITEM.



A/35 **RIPRAP AT INLET & OUTLET**
NOT TO SCALE



B/35 **PLAN VIEW OF RIPRAP AT INLET & OUTLET**
NOT TO SCALE



C/35 **CULVERT END TREATMENT**
NOT TO SCALE

ESTIMATED QUANTITIES	
STRUCTURE EXCAVATION	39 CY
STRUCTURAL BACKFILL	190 CY
RIPRAP, CLASS 1	14 CY
STREAMBED SIMULATION ROCK	12 CY

PREPARED BY:
GreatWest engineering
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

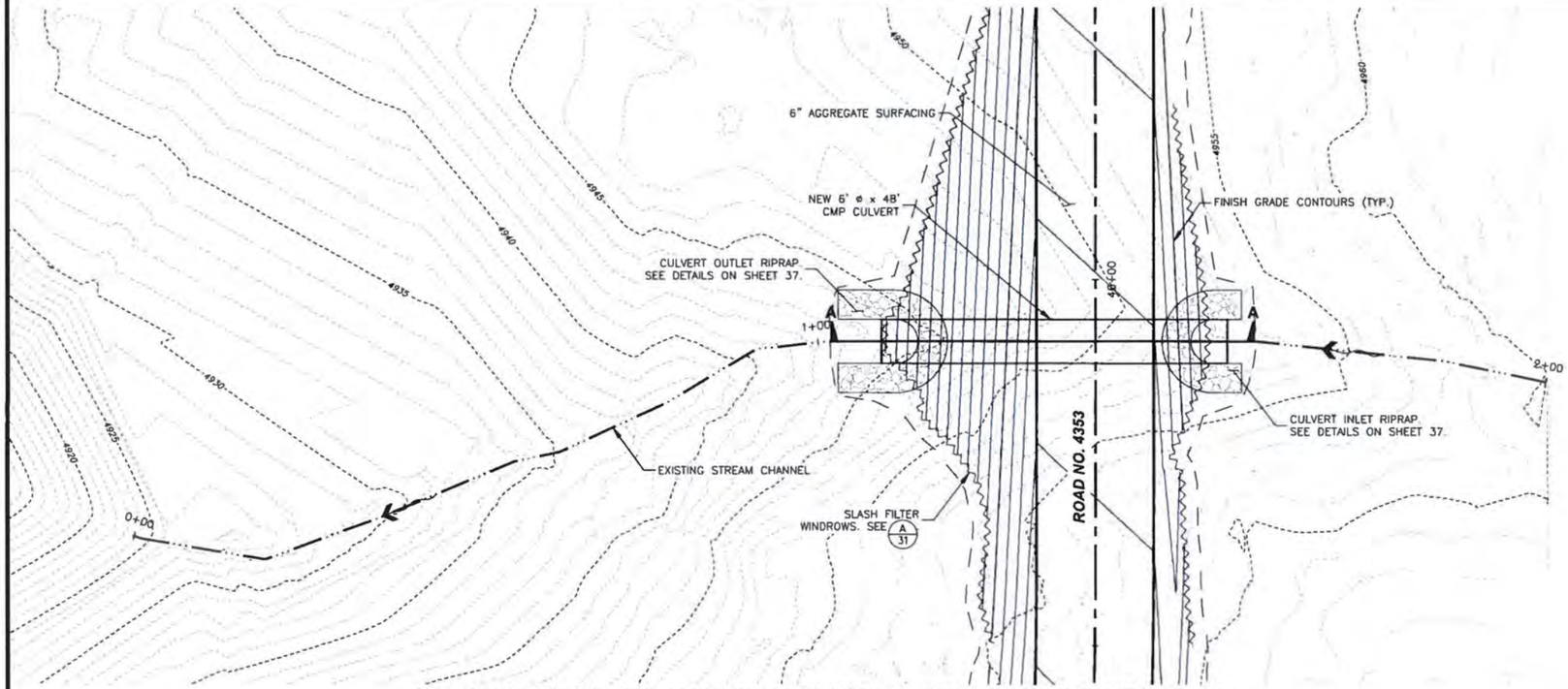
MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

STREAM CROSSING 1 DETAILS

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

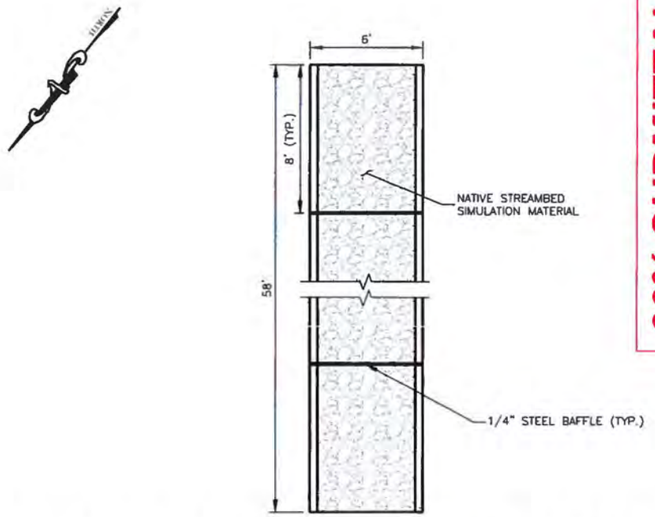
SHEET NO. 35 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-35-Stream Crossing 1 Details.dwg

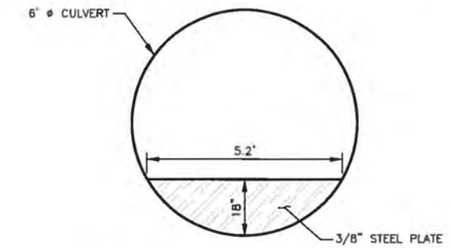


PLAN VIEW OF STREAM CROSSING 2 - STA. 0+00 TO STA. 2+00

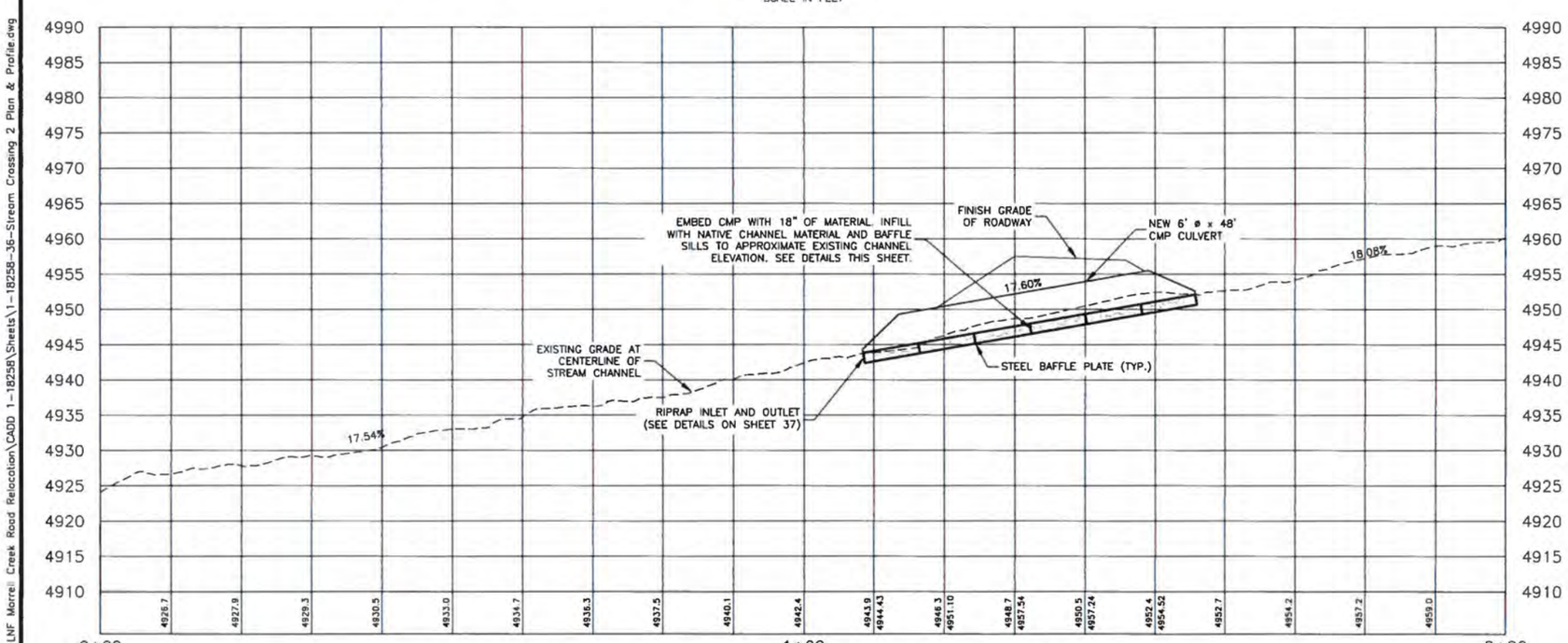
0 10 20
SCALE IN FEET



A 36 **SECTION A-A TYPICAL CULVERT PLAN VIEW**
NOT TO SCALE



B 36 **STEEL BAFFLE**
NOT TO SCALE



PROFILE VIEW OF STREAM CROSSING 2 - STA. 0+00 TO STA. 2+00

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

GENERAL NOTES:

1. SUPPLY AND INSTALLATION OF STEEL BAFFLES IS INDIRECTLY PAID UNDER BID ITEM 60201C.
2. CONTRACTOR SHALL CONNECT BAFFLES PER CULVERT MANUFACTURER'S RECOMMENDATIONS. IF WELDED, SPRAY-GALVANIZE (2 COATS) BAFFLE PLATES AFTER WELDING; INDIRECTLY PAID UNDER BID ITEM 60201C.
3. IF CULVERT SPLICE IS REQUIRED, LOCATE SPLICE HALFWAY BETWEEN BAFFLES.

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627
FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE
REGION ONE

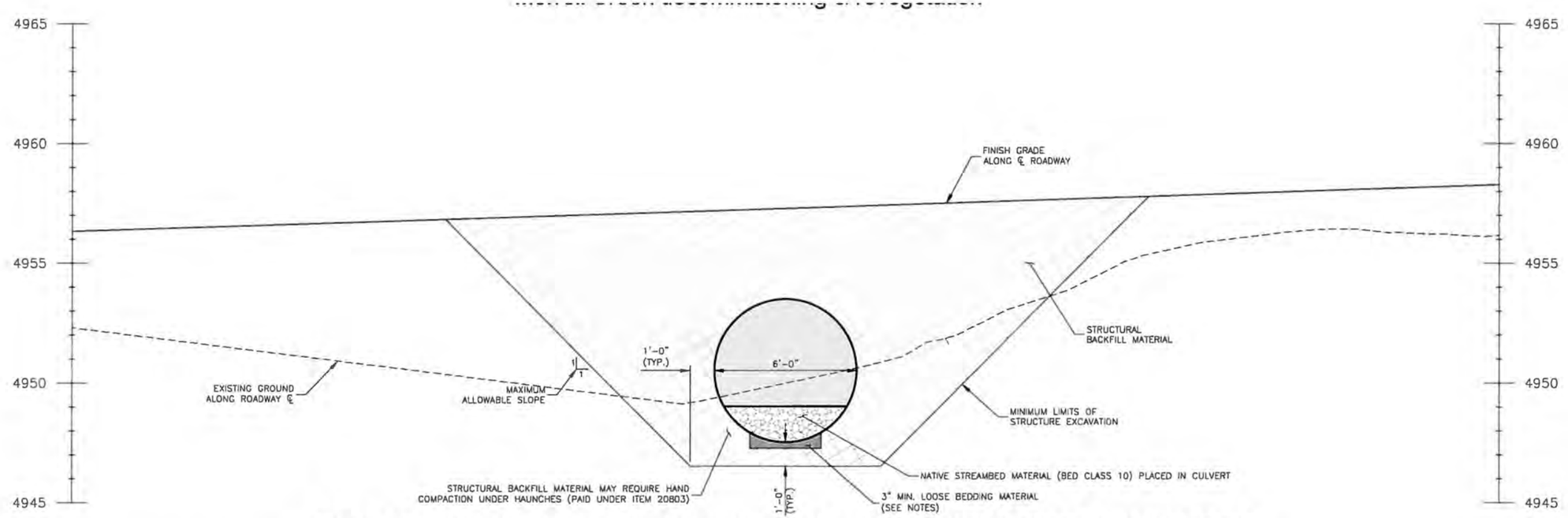
90% SUBMITTAL

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

STREAM CROSSING 2 PLAN & PROFILE

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE	SHEET NO.
DESIGNED: BLP	DESIGN CHECKED: RME	△				36 OF 38
DRAWN: BLP	DRAWING CHECKED: JJT	△				

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-36-Stream Crossing 2 Plan & Profile.dwg



TYPICAL SECTION - STREAM CROSSING 2 - 6' DIA. CORRUGATED STEEL PIPE CULVERT

NOTE:
ROADWAY STATIONS RUN FROM LEFT TO RIGHT

SCALE 1" = 5'

STRUCTURE EXCAVATION NOTES:

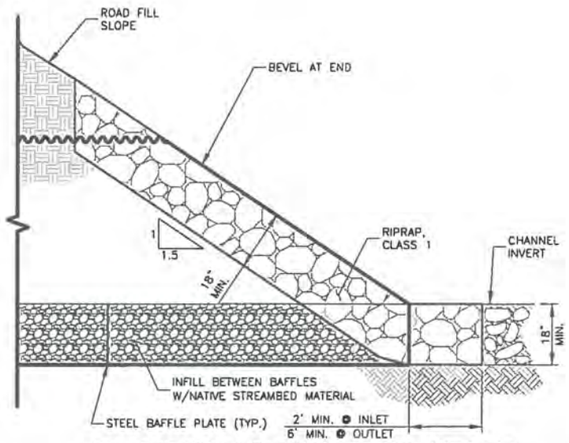
1. STRUCTURE EXCAVATION SHALL BE COMPLETED IN ACCORDANCE WITH FP-14, SECTION 208.
2. LIMITS SHOWN ARE MINIMUM EXCAVATION REQUIREMENTS BASED ON ENGINEERS DETERMINATION OF OSHA SOIL TYPE B AND OSHA EXCAVATION REQUIREMENTS. DETERMINATION IS BASED ON LIMITED DATA AND ACTUAL SITE CONDITIONS MAY VARY.
3. STRUCTURE EXCAVATION QUANTITY SHOWN IS FOR INFORMATION ONLY BASED ON THE LIMITS SHOWN. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES BASED ON THEIR OWN EXCAVATION PLAN.
4. CONTRACTOR SHALL SUBMIT EXCAVATION PLAN TO C.O. FOR APPROVAL. PLAN SHALL INCLUDE DRAWINGS AND WRITTEN OUTLINE ILLUSTRATING AND DESCRIBING PROPOSED EXCAVATION LIMITS, METHODS, EQUIPMENT, LOCATION OF STOCKPILES, AND ESTIMATED QUANTITIES AND COMPLY WITH OSHA EXCAVATION SOIL TYPING AND REQUIREMENTS. CHANGES TO THE EXCAVATION LIMITS SHOWN ON THIS SHEET FOR CONTRACTOR'S DEWATERING METHODS OR OTHER CONTRACTOR CONVENIENCE, MUST BE SHOWN ON THE CONTRACTOR'S PLAN AND ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK IS INDIRECTLY PAID BY ITEM 20803.
5. SUITABLE STRUCTURE EXCAVATION OR ROADWAY EXCAVATION MATERIAL MAY BE UTILIZED AS NATIVE STREAMBED MATERIAL. MATERIALS TO BE APPROVED BY THE C.O. PRIOR TO PLACEMENT. SOME MIXING AND SORTING MAY BE REQUIRED.

DEWATERING AND EROSION CONTROL:

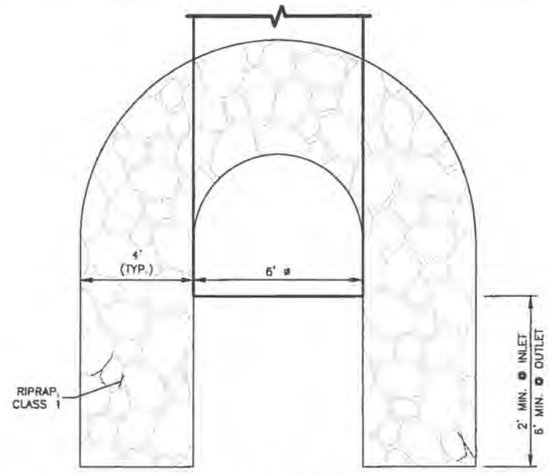
1. PROTECT AGAINST SOIL EROSION AND SEDIMENTATION DURING CONSTRUCTION IN ACCORDANCE WITH FP-14, SECTION 157 AND THE PROJECT PERMITS. CONTRACTOR SHALL PREPARE AND SUBMIT A SOIL EROSION AND SEDIMENT CONTROL PLAN TO C.O. FOR APPROVAL. PLAN SHALL INCLUDE DRAWINGS AND A WRITTEN OUTLINE ILLUSTRATING AND DESCRIBING PROPOSED LAYOUT, METHODS, AND EQUIPMENT.
2. DEWATER THE EXCAVATION IN ACCORDANCE WITH FP-14 SECTIONS 208, 209, 157 AND THE REQUIREMENTS ON SHEET 2.
3. CONTRACTOR SHOULD ANTICIPATE WATER INFILTRATING THE EXCAVATIONS.
4. SUBGRADE EXCAVATION, RIPRAP PLACEMENT, AND BACKFILL MATERIALS ARE TO BE COMPLETED PER THE CONTRACT SPECIFICATIONS AND STANDING OR RUNNING WATER IN THE WORK AREA DOES NOT RELIEVE THE CONTRACTOR FROM MEETING THE SPECIFICATIONS.

BACKFILL MATERIALS:

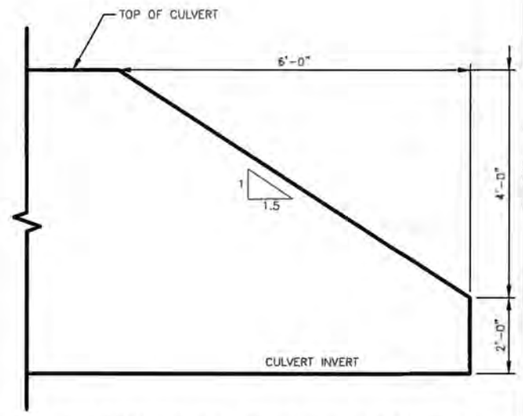
1. ALL STRUCTURAL BACKFILL MATERIAL SHALL MEET THE MATERIAL REQUIREMENTS IN FP-14 SECTION 704.4 AND BE COMPACTED IN ACCORDANCE WITH FP-14 SECTION 208. THE PROCTOR DENSITY FOR BACKFILL MATERIAL(S) SHALL BE OBTAINED IN ACCORDANCE WITH AASHTO T99, METHOD C. SAMPLING AND TESTING IS REQUIRED PER FP-14 TABLE 208-1.
2. BACKFILL LIMITS SHOWN ARE MINIMUM REQUIREMENTS. ANY BACKFILL OUTSIDE THE SHOWN LIMITS SHALL BE CONSIDERED ROADWAY EMBANKMENT AND MUST MEET THE REQUIREMENTS OUTLINED IN FSSS 204.
3. BEDDING MATERIAL CONSISTS OF LOOSELY PLACED AGGREGATE SURFACE COURSE. PAYMENT IS INDIRECT TO THE APPROPRIATE CULVERT BID ITEM.



A/37 **RIPRAP AT INLET & OUTLET**
NOT TO SCALE



B/37 **PLAN VIEW OF RIPRAP AT INLET & OUTLET**
NOT TO SCALE



C/37 **CULVERT END TREATMENT**
NOT TO SCALE

ESTIMATED QUANTITIES	
STRUCTURE EXCAVATION	50 CY
STRUCTURAL BACKFILL	152 CY
RIPRAP, CLASS 1	14 CY
STREAMBED SIMULATION ROCK	10 CY

PREPARED BY
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION
ROAD NO. 4353
LOLO NATIONAL FOREST

STREAM CROSSING 2 DETAILS

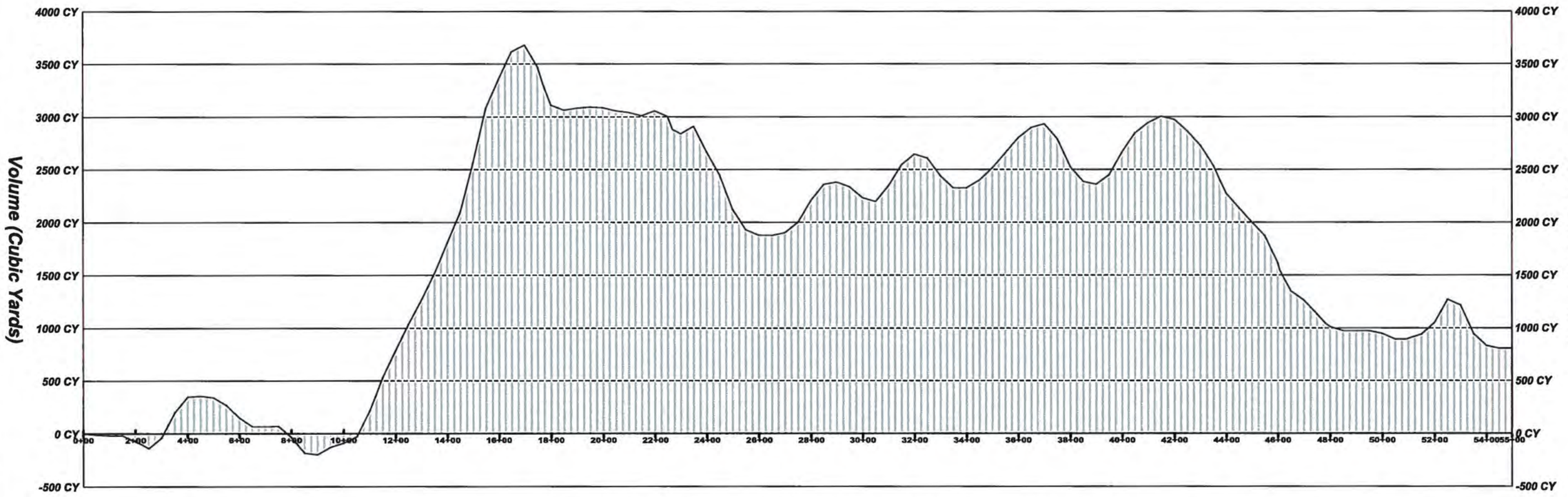
PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 37 OF 38

90% SUBMITTAL

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-37-Stream Crossing 2 Details.dwg

90% SUBMITTAL



MASS HAUL VIEW OF MORRELL CREEK ROAD NO. 4353 RELOCATION

HORIZONTAL SCALE: NOT TO SCALE

PREPARED BY:
GreatWest engineering®
2501 BELT VIEW DRIVE
HELENA, MT 59601
(406)449-8627

FOREST SERVICE
USDA
DEPARTMENT OF AGRICULTURE
REGION ONE

MORRELL CREEK ROAD RELOCATION

ROAD NO. 4353
LOLO NATIONAL FOREST

MASS HAUL DIAGRAM

PROJECT: 1-18258	DATE: MARCH 8, 2019	NO.	REVISION DESCRIPTION	BY	DATE
DESIGNED: BLP	DESIGN CHECKED: RME	△			
DRAWN: BLP	DRAWING CHECKED: JJT	△			

SHEET NO. 38 OF 38

F:\1-18258-LNF Morrell Creek Road Relocation\CADD 1-18258\Sheets\1-18258-37-Mass Haul Diagram.dwg